

FINAL

**Program Environmental Impact Report
Salt Creek Interceptor Sewer and**

VOLUME II - APPENDICES

**EIR 01-03
SCH# 200011072**

Prepared for:



**CITY OF
CHULA VISTA**

276 4th Avenue

Chula Vista, CA 91910

Contact: Marilyn R. F. Pongeggi, Environmental Review Coordinator
(619) 585-5707

June 2001

Appendix A

NOP

November 8, 2000

NOTICE OF PREPARATION
PROGRAM ENVIRONMENTAL IMPACT REPORT
SALT CREEK AND WOLF CANYON SEWERS
CITY OF CHULA VISTA

The City of Chula Vista is the lead agency in the preparation of a Program Environmental Impact Report for alignment selection and construction of sewer facilities to provide sewage conveyance for approved development within the Salt Creek and Wolf Canyon drainage area in eastern Chula Vista.

This notice is issued pursuant to Section 15082 of the State CEQA Guidelines. It is intended to inform those persons and organizations that may be concerned with the environmental effects of the project. Those public agencies with specific statutory responsibilities are requested to indicate their specific role in the project approval process.

Because of the time limits provided by State law, responses should be sent at the earliest possible date, but not later than 30 days after receipt of this notice. Please send your response to:

City of Chula Vista Planning Department
Attn: Marilyn R. F. Pongeggi, Environmental Review Coordinator
276 Fourth Avenue
Chula Vista, CA 91910

ENVIROMENTAL DOCUMENTS

The Program EIR prepared for the project will conform to the requirements of Section 15120-15131 of the California Environmental Quality Act (CEQA) Guidelines for the Implementation of CEQA, and guidelines set forth by the City of Chula Vista for determination of impacts. The Program EIR will contain a program-level of analysis for the Wolf Canyon Sewer, and a project-level analysis for the Salt Creek Sewer, since the level of planning for the Salt Creek portion of the sewer has progressed further than for the Wolf Canyon alignment. As part of the environmental review process, a study of the following environmental issues are anticipated to be discussed: aesthetics, air quality, biological resources, cultural resources, geology and soils, hydrology and water quality, land use and planning, noise, and traffic/circulation. In addition, the Program EIR will address project alternatives, cumulative impacts, growth-inducing impacts, and other topics, as required by CEQA.

PROJECT BACKGROUND

For purposes of alignment planning and facility design, various environmental considerations and engineering constraints/criteria were taken into account. In the undeveloped portions of the alignment, existing dirt roads were used; to the greatest extent feasible, to avoid impacts to sensitive habitats. Additionally the study considered alternatives that would avoid and/or minimize impacts to wetlands and waters of the United States, pursuant to the requirements of Section 404 (b)(1) of the federal Clean Water Act. The alignment's location is constrained by fixed end points and topographical considerations, that are related to the desire to connect to the existing segment of pipeline in the Salt Creek area, and the desire to provide gravity flow of sewage, respectively.

Design of a gravity flow facility in the Salt Creek area also tends to place the alignment in close proximity to wetlands, since the topographical conditions that are favorable to the design of a gravity sewer also tend to facilitate surface drainage, which can result in the development of wetland habitats. Avoidance and minimization of wetland impacts, therefore, provided further constraints to the location of this alignment, and resulted in a portion of the alignment in the Salt Creek area traversing areas of sensitive upland habitats, particularly, coastal sage scrub and maritime succulent scrub. The use of an existing dirt road on the eastern side of Salt Creek Canyon was considered and rejected because of more extensive impacts to wetlands.

PROJECT LOCATION

The sewer facilities would convey sewage from developing communities in the eastern portions of the City of Chula Vista to the Metro Interceptor sewer line, located west of Interstate 5. The general route of the recommended alignment is from I-5 east via Main Street, turning southeast on Old Otay Valley Road, then back into Main Street, continuing east past I-805 to the eastern terminus of Main Street, where the road turn south and becomes Heritage Road.

The alignment continues east along unpaved roads to a point within the southern portion of Salt Creek, where an existing segment of pipe has been constructed. The alignment continues north up Salt Creek, with two alternatives located in this segment, one travelling directly north, and the other following parallel to existing power and water easements to the future alignment of Hunte Parkway: This alternative segment would travel within the Hunte Parkway alignment to the terminus of the project. The Wolf Canyon alignment is proposed at a conceptual level to intercept the Salt Creek sewer generally at the confluence of Wolf Canyon and the Otay River Valley. This alignment would then travel up an unpaved road through Wolf Canyon, then would turn to the east within areas proposed for development within Otay Ranch.

PROJECT DESCRIPTION

The proposed project (also referred to as the Recommended Alternative Alignment) would serve portions of the following planned communities: Rolling Hills Ranch, Eastlake, and Otay Ranch, as well as the Olympic Training Center. Some of the development that is proposed to be served by the project is currently built and occupied, or is under construction. The undeveloped areas that would utilize the project facilities have been approved at either a General Development Plan (GDP) or Sectional Planning Area (SPA) plan level. All of the proposed areas to be served by the project have been reviewed under the requirements of CEQA and have been approved for development by the City. The project itself was considered and conceptually approved as part of the Otay Ranch General Development Plan, to serve the development contemplated in that plan.

The Recommended Alternative Alignment is the result of the findings of the *Salt Creek Gravity Sewer Interceptor Preliminary Design Report* (Dudek and Associates, 1999). That study identified an alignment for the proposed pipeline that would connect and use the existing segment of sewer line that was installed coincident with the construction of a high-pressure gas line in 1995, and that would provide gravity flow of sewage throughout the facility. The pipeline would range in size from 10" to 48", and would convey between approximately 1.2 and 12 million gallons per day of sewage, to serve previously approved development.

The Preliminary Design Report described the pipeline in 9 segments or "reaches". Reach 9 is the westernmost portion of the pipeline, with reaches 8 through 6 moving east through the Otay River Valley. Reach 5 turns north at Salt Creek Canyon, and reaches 4 and 3 continue north up the canyon to Olympic Parkway. Reach 1 has already been constructed and Reach 2 has been studied and its alignment approved as part of approved development within which the reach is located. Reaches 1 and 2 are not considered to be part of the proposed project. In addition to the alignment identified in the Preliminary Design Report, an additional extension of the sewer that would run from the Otay River Valley north via an existing dirt road through Wolf Canyon, serving proposed development in that drainage area has been identified. That portion of the alignment is referred to as the Wolf Canyon reach.

Preliminary discussions with the U.S. Fish and Wildlife Service and the California Department of Fish and Game (collectively, the wildlife agencies) regarding this alignment alternative have taken place as part of discussions regarding the City of Chula Vista's Multiple Species Conservation Program (MSCP) Subarea Plan. A conceptual version of the project facilities has been identified in the Subarea Plan, which has been adopted by the City Council. The Subarea Plan, and its associated Implementing Agreement are currently being reviewed by the Wildlife Agencies for their approval. The Subarea Plan identifies the facilities as a "conditionally compatible use" within the preserve, for the portions of the alignment that are within the proposed preserve. The location of the Recommended Alternative Alignment is consistent with the conceptual alignment identified in the Subarea Plan.

In the Subarea Plan discussions, the wildlife agencies indicated a desire for the City to consider an alternative alignment that would remove the facility from the most sensitive areas of the alignment (identified as reaches 3 and 4, within the undisturbed areas of Salt Creek Canyon). Given the constraints discussed previously, it was evident that avoidance of these sensitive areas would require pumping of the sewage from the portions of the sewer that are currently under construction (reaches 1 and 2) to a higher point within areas proposed for development (in the area of Village II as identified in the Otay Ranch General Development Plan). An option involving pumping would not conform to the current City policy related to avoidance of sewage pumping. As a result, two policy options have been developed for this alternative, described below as Policy Options 1 and 2. It should be noted that the Policy Options 1 and 2 relate only to the portion of the sewer pipeline that would run from Olympic Parkway to the northern end of the existing segment of pipeline in Salt Creek, which are identified as reaches 3 and 4. The remaining reaches of the Recommended Alignment Alternative (reaches 5 through 9 and the Wolf Canyon reach) would remain the same under either Policy Option. The description provided below begins with reach 9, proceeding from the west to the east. The Policy Options 1 and 2 involve the easternmost reaches.

POTENTIAL ENVIRONMENTAL IMPACTS

In accordance with CEQA, the Program EIR for the Salt Creek and Wolf Canyon sewers will evaluate the potential environmental impacts associated with the approval of the specific alignment for the Salt Creek sewer (project-level of approval) and for the conceptual alignment of the Wolf Canyon sewer (program-level of approval). The Program EIR will recommend measures to mitigate any significant impacts that would result from project-related actions.

The City of Chula Vista has determined that the following issues must be discussed in the Program EIR:

Aesthetics:

At completion, the majority of project facilities would be located underground. However,

portions of the pipeline that travel through undeveloped or open space areas would have an access road for sewer facility maintenance. Aesthetic impacts related to the access road will be discussed in the EIR.

Air Quality:

The EIR will evaluate short-term dust and construction vehicle emissions that would result from project construction. In the event that the project would require the long-term use of a pump station, the EIR would evaluate air quality impacts related to increased energy consumption.

Biological Resources:

Portions of the pipeline in the eastern reaches of the project would directly impact biological resources, and would be located within an area proposed for preserve under the City of Chula Vista's MSCP Subarea Plan. The EIR will address impacts related to these factors.

Cultural Resources:

Portions of the pipeline that would be constructed in undeveloped areas would have the potential to result in impacts to cultural resources. The EIR will contain an analysis of these potential effects.

Geology and Soils:

Adverse geotechnical and/or soils conditions could result in problems related to construction and maintenance of the proposed facilities. In addition, short-term erosion potential could exist during project construction. The EIR will evaluate potential impacts associated with geology and soils.

Hydrology and Water Quality:

The EIR will address the project's potential to result in adverse effects to hydrology and water quality, including erosion, increased impervious surfaces, alterations in drainage patterns, and other related issues.

Land Use and Planning:

The project traverses areas that are occupied or planned for a variety of land uses. In addition, planning programs are in place for park, trails, open space, and other uses along the recommended alignment. The EIR will address potential impacts to existing and proposed land uses and to planning efforts in the project area, including any necessary acquisition and/or condemnation to obtain easements.

Noise:

Construction of the project would have the potential to result in noise impacts. In addition, noise impacts could result from operation of a pump station. The EIR will address any potential impacts related to noise that are associated with the project.

Traffic/Circulation:

Portions of the project would be constructed within existing roadways, and would have

the potential to result in adverse impacts to traffic, circulation and access. The EIR will address these issues, and recommend appropriate mitigation measures.

Cumulative Impacts:

Development that is proposed to be served by the project has been analyzed under CEQA for individual and cumulative project impacts. The EIR will address how the proposed project relates to other projects and activities proposed within the project vicinity.

Growth-Inducing Impacts:

The proposed project is intended to serve existing and planned development, and is therefore considered to be growth-accommodating, rather than growth-inducing. The EIR will contain a complete analysis and discussion of this issue.

Alternatives:

Alternatives including a No Project Alternative, and an alternative that could avoid or reduce the need for easement acquisition and/or condemnation will be considered and discussed in the EIR. Details on the locations for those alternatives, will be fully identified in the EIR.

**LIST OF AGENCIES, ORGANIZATIONS, AND INDIVIDUALS TO RECEIVE
THIS
NOTICE OF PREPARATION**

State Clearinghouse
Chula Vista Elementary School District
Sweetwater Union High School District
Environmental Health Services
California Department of Fish & Game
Endangered Habitats League
Bureau of Land Management
CalTrans District 11
County of San Diego Air Pollution Control District
County of San Diego Department of Planning and Land Use
County of San Diego Public Works Department
San Diego Association of Governments
Pacific Bell
San Diego Gas & Electric
U.S. Army Corps of Engineers - San Diego, CA
Sierra Club - San Diego Chapter
Sempra Energy
U.S. Fish & Wildlife Services
Otay Water District
City of San Diego Planning Department
Metropolitan Transit Development Board
San Diego Audubon Society
City of National City Planning Department
County of San Diego Archaeological Society
Chula Vista Star-News
California Native Plant Society
County of San Diego Department of Parks & Recreation
San Diego Union-Tribune
Sweetwater Authority
Regional Water Quality Control Board - San Diego Region 9
County of San Diego Water Authority
City of San Diego Metropolitan Wastewater Department
Metropolitan Water District



THE CITY OF SAN DIEGO



MWWDPROG



2000067379

December 19, 2000

John Lippitt
Director of Public Works
City of Chula Vista
276 Fourth Avenue
Chula Vista, CA 91910

Dear Mr. Lippitt:

During a meeting held on December 5, 2000, you indicated your interest in connecting the proposed Salt Creek Trunk Sewer to the South Metro Interceptor (SMI) at Main Street and the I-5 Interchange. You also indicated your interest in diverting the Date-Faivre Trunk Sewer (a City of Chula Vista Sewer Line) to the Salt Creek Trunk Sewer.

The following is the Metropolitan Wastewater Department's (MWWD) response regarding your request.

1. Based on the flow projections (13 mgd) received from your staff for the Salt Creek Trunk Sewer, we see no problem with the proposed connection to the SMI.
2. Although the Date-Faivre Trunk Sewer is a City of Chula Vista pipeline, its diversion to the Salt Creek Trunk Sewer is not acceptable to the City of San Diego. The City of San Diego, MWWD is currently in the process of issuing a Request for Proposal for design and construction of a pump station that will intercept the Date-Faivre pipeline at its current location and divert its flows to the new South Bay Water Reclamation Plant. The Otay Pump Station is intended to relief the Metro System by diverting some of the flows generated in the South Bay Area to the South Bay Water Reclamation Plant.



Engineering and Program Management Division • Metropolitan Wastewater

9192 Tapoz Way • San Diego, CA 92123
Tel (658) 292-6300 Fax (658) 292-6310

Page 2
John Lippitt
December 19, 2000

3. Although we don't see a technical problem with the connection at Main Street, we believe that there are contractual capacity matters that will need to be discussed with the City of Chula Vista prior to the approval being granted. In order to expedite your request you should contact Hedy Griffith at (858) 292-6321 or Bill Hanley at (858) 292-6384.

If you have any questions please feel free to call me at (858) 292-6469.

Sincerely,



Ann Sasaki
Deputy Director
Engineering and Program Management

AS/am



SAN DIEGO AUDUBON SOCIETY
2321 Morena Boulevard, Suite D • San Diego CA 92110 • 619/275-0557

December 8, 2000

VIA FACSIMILE: 619-409-5859

Ms. Marilyn Pongeggi
Environmental Review Coordinator
City of Chula Vista
276 Fourth Avenue
Chula Vista, California 91910

Dear Ms. Pongeggi:

Subject: NOP for EIR for Salt Creek and Wolf Canyon Sewers, City of Chula Vista, November 8, 2000

The San Diego Audubon Society strongly recommends that the subject EIR include analysis of an alternative alignment that will run along undeveloped canyons. The City of San Diego is anticipating relocating several sewer pipes out of canyons because of problems that have occurred with sewers in canyons. Some of these problems are:

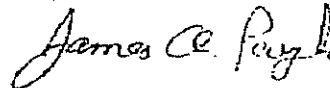
- difficulty in monitoring and repairing sewers in canyons, especially during rainy weather when a large portion of sewer spills occur,
- risks to the health and safety of personnel that must monitor or repair the pipes during rainy weather,
- reduced likelihood of prompt detection of pipe damage, degradation, and spills in remote areas,
- increased likelihood of vandalism to the sewer pipe when located in remote areas,
- increased likelihood of spills and sewer damage caused by the highly erosive stream flow through canyons during storms, (The 35 million gallon Adobe Falls spill in November 1999 is a good example.)
- downstream sedimentation due to erosion of the fill over the sewer pipe, the surface of the access road, and the cut and fill areas associated with both the pipe and the road,
- increased risk of fires, crime, habitat degradation, illegal camping, and downstream sedimentation due to the access roads needed to monitor and maintain sewers in canyons,
- habitat loss and degradation caused by the sewer installation and the service roads and the erosion and sedimentation resulting from them,
- continuing cost and impacts to vegetation and erosion risks due to the need to frequently repair and maintain the roadway to provide reliable access to the pipes in canyons,
- invasion of non-native plants due to the disturbance of soils and due to the introduction of non-native seeds by construction, monitoring, and maintenance vehicles,
- cost of restoring the canyon vegetation and hydrology after construction, emergency repairs, and planned replacements, and the
- cost of maintaining the canyon itself to offset the continuing impacts of the sewer, the road, the vehicle access, and the additional access by transients, off-road vehicles, etc. facilitated by the maintenance road.

The City of San Diego has formed a Canyon Sewer Task Force consisting of MWWWD employees, consultants, and a group of appointed volunteers to investigate this issue and advise the City Council. The results show that locating sewers outside of canyons and environmentally sensitive areas is a far superior alternative. Even though lift pumps are expensive and can be an additional source of system failure, it is often even better to use a lift pump if necessary to get a sewer pipe up to a gravity line located out of a canyon, preferably along a street or some other linear right-of-way.

Again, we urge that Chula Vista design and analyze and select as the environmentally preferred alternative a design that locates this sewer pipe in a location not in a canyon, wetland, other environmentally sensitive areas, or sites that have inherently high risks of erosion damage. We also urge that Chula Vista analyze, in the EIR, each of the environmental, water quality, economic, and quality of life impacts listed above. It would be inappropriate for the Chula Vista to spend substantial public resources and perpetually degrade significant areas of protected natural habitat in a type of project that has been demonstrated to be largely disfunctional in our region.

The undersigned has participated in an investigation of the Adobe Falls spill for the San Diego Metropolitan Wastewater District and in the City of San Diego's Canyon Sewer Task Force, and would be happy to discuss the information learned from both with the people planning the project and preparing the EIR. For future questions or discussion use, 619-224-4591, peugh@home.com, or 2776 Nipoma Street, San Diego, California 92106-1112.

Respectfully,

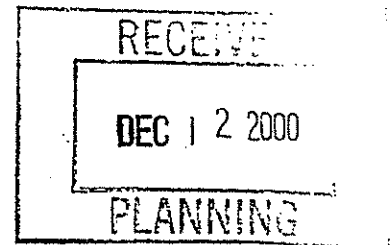


James A. Peugh
Coastal and Wetlands Conservation Chair



THE CITY OF SAN DIEGO

December 7, 2000



Ms. Marilyn R. F. Pongeggi
Environmental Review Coordinator
City of Chula Vista Planning Department
276 Fourth Avenue
Chula Vista, CA 91910

Dear Ms. Pongeggi:

Subject: Notice of Preparation of a Program Environmental Impact Report for the
Salt Creek and Wolf Canyon Sewers in the City of Chula Vista

We have completed our review of the subject Notice of Preparation of a Program Environmental Impact Report dated November 8, 2000. The project consists of an underground sewer pipeline and related facilities to convey sewage flows from the developing areas located in eastern Chula Vista to existing sewage conveyance facilities west of Interstate 5, which ultimately carry flows to the existing Point Loma Sewage Treatment Plant.

Because the proposed project lies within the watershed of the City of San Diego's Lower Otay Reservoir, the City of San Diego's Water Department must be assured that Best Management Practices have been addressed and implemented. Please provide the Water Review Section with a copy of the Best Management Practices relating to this project for our review.

The Water Department's Engineering - Hydrography Section is concerned with any issues involving the City of San Diego's watershed. Therefore, a copy of the submittal package was forwarded to Associate Engineer Arlene Dea Deeley [(619) 527-8065] of the Hydrography Section. Any comments they may have will be forwarded directly to your office.

If you have any questions or require further information, please call me at (619) 533-7417.

Chris Gascon, P.E.

cc: Shahin Moshref, Senior Civil Engineer, Planning and Development Review

00-203-22.001





Gray Davis
GOVERNOR

STATE OF CALIFORNIA

Governor's Office of Planning and Research
State Clearinghouse



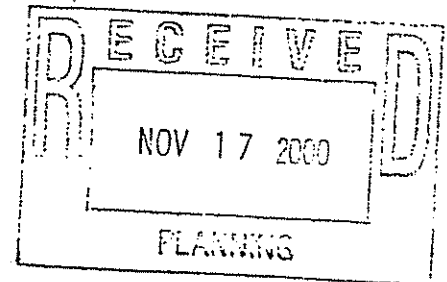
Steve Nissen
ACTING DIRECTOR

Notice of Preparation

November 13, 2000

To: Reviewing Agencies

Re: Salt Creek and Wolf Canyon Sewers
SCH# 2000111072



Attached for your review and comment is the Notice of Preparation (NOP) for the Salt Creek and Wolf Canyon Sewers draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Marilyn R. F. Pongeggi
City of Chula Vista
276 Fourth Avenue
Chula Vista, CA 91910

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan
Project Analyst, State Clearinghouse

Attachments
cc: Lead Agency

**Document Details Report
State Clearinghouse Data Base**

SCH# 2000111072
Project Title Salt Creek and Wolf Canyon Sewers
Lead Agency Chula Vista, City of

Type NOP Notice of Preparation
Description The project consists of an underground sewer pipeline and related facilities to convey sewage flows from the developing areas in eastern Chula Vista to existing sewage conveyance facilities west of Interstate 5, that ultimately carry flows to the existing Point Loma Sewage Treatment Plant.
The proposed project would serve portions of the following planned communities: Rolling Hills Ranch, Eastlake, and Otay Ranch, as well as the Olympic Training Center. Some of the development that is proposed to be served by the project is currently built and occupied, or is under construction.

Lead Agency Contact

Name Marilyn R. F. Ponseggi
Agency City of Chula Vista
Phone 619-691-5047 **Fax**
email
Address 276 Fourth Avenue
City Chula Vista **State** CA **Zip** 91910

Project Location

County San Diego
City Chula Vista
Region
Cross Streets Old Otay Valley Road, Main Street, Heritage Road

Parcel No.	Township	Range	Section	Base
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Proximity to:

Highways I-805, I-5
Airports
Railways
Waterways Salt Creek
Schools
Land Use

Project Issues Aesthetic/Visual; Air Quality; Other Issues; Agricultural Land; Geologic/Seismic; Water Quality; Landuse; Noise; Traffic/Circulation; Cumulative Effects; Growth Inducing

Reviewing Agencies Resources Agency; Department of Conservation; Office of Historic Preservation; Department of Parks and Recreation; Department of Health Services; Department of Fish and Game, Region 5; Native American Heritage Commission; Public Utilities Commission; State Lands Commission; Caltrans, District 11; California Highway Patrol; Integrated Waste Management Board; State Water Resources Control Board, Division of Water Quality; Department of Toxic Substances Control

Date Received 11/13/2000 **Start of Review** 11/13/2000 **End of Review** 2/12/2000

County: San Diego

TOP Distribution List

Resources Agency

Fish and Game

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Dev't. Comm.
Steve McAdam

☐ Dept. of Fish & Game
DeWayne Johnston
Marine Region

☐ Resources Agency
Nadell Gayou
Dept. of Water Resources

Health & Welfare

Independent Commissions

☒ Health & Welfare
Wayne Hubbard
Dept. of Health/Drinking Water

☐ California Energy Commission
Environmental Office

Food & Agriculture

☐ Food & Agriculture
Tad Bell
Dept. of Food and Agriculture

☒ Native American Heritage
Comm.
Debbie Treadway

☒ Public Utilities Commission
Andrew Barnsdale

☒ State Lands Commission
Betty Silva

☐ Colorado River Board
Gerald R. Zimmernan

☐ Tahoe Regional Planning
Agency (TRPA)
Lyn Barnett

☐ Office of Emergency Services
John Rowden, Manager

☐ Delta Protection Commission
Debby Eddy

☐ Santa Monica Mountains
Conservancy
Paul Edelman

Dept. of Transportation

☐ Dept. of Transportation
IGR/Planning
District 1

☐ Dept. of Transportation
Vicki Roe
Local, Development Review,
District 2

☐ Dept. of Transportation
Jeff Pulverman
District 3

☐ Dept. of Transportation
Jean Finney
District 4

☐ Dept. of Transportation
Lawrence Newland
District 5

☐ Dept. of Transportation
Marc Blimbaum
District 6

☐ Dept. of Transportation
Stephen J. Buswell
District 7

☐ Dept. of Transportation
Mike Slim
District 8

☐ Dept. of Transportation
Caroline Yee for Kate Walton
District 9

☐ Dept. of Transportation
Chris Sayre
District 10

☒ Dept. of Transportation
Lou Salazar
District 11

☐ Dept. of Transportation
Alleen Kennedy
District 12

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Housing Policy Division

☐ Caltrans - Division of Aeronautics
Sandy Hesnard

☒ California Highway Patrol
Lt. Dennis Brunette
Office of Special Projects

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Caltrans - Planning

☐ Dept. of General Services
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Airport Projects
Rob Rogen

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Mike Tollstrup

☒ California Integrated Waste
Management Board
Sue O'Leary

☐ State Water Resources Control
Board
Diane Edwards
Division of Clean Water Programs

☒ State Water Resources Control
Board
Greg Frantz
Division of Water Quality

☐ State Water Resources Control
Board
Mike Falkenstein
Division of Water Rights

☒ Dept. of Toxic Substances Control
CEQA Tracking Center

Regional Water Quality Control
Board (RWQCCB)

☐ RWQCCB
Cathleen Hudson
North Coast Region (1)

☐ RWQCCB
Environmental Document
Coordinator
San Francisco Bay Region (2)

☐ RWQCCB
Central Coast Region (3)

☐ RWQCCB
Jonathan Bishop
Los Angeles Region (4)

☐ RWQCCB
Central Valley Region (5)

☐ RWQCCB
Central Valley Region (5)
Fresno Branch Office

☐ RWQCCB
Central Valley Region (5)
Redding Branch Office

☐ RWQCCB
Lahontan Region (6)

☐ RWQCCB
Lahontan Region (6)
Victorville Branch Office

☐ RWQCCB
Colorado River Basin Region (7)

☐ RWQCCB
Santa Ana Region (8)

☐ RWQCCB
San Diego Region (9)



San Diego Local Agency Formation Commission

1600 Pacific Highway • Room 457
San Diego, CA 92101 • (619) 531-5400

Website: www.sdlafco.com

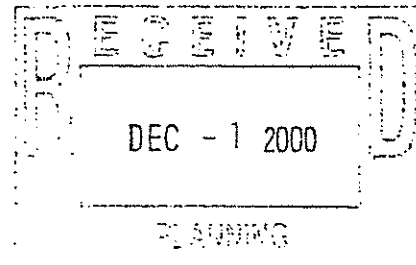
Chairwoman

Julianne Nygaard
Councilmember,
City of Carlsbad

November 28, 2000

Vice Chairman

Andrew L. Vanderlaan
Public Member



Members

Bill Horn
County Board of
Supervisors

Marilyn R.F. Pongeggi
City of Chula Vista
Planning Department
276 Fourth Avenue
Chula Vista, CA 91910

Dianne Jacob
County Board of
Supervisors

SUBJECT: Notice of Preparation of an Program Environmental Impact
Report: Salt Creek and Wolf Canyon Sewers

Patty Davis
Councilmember,
City of Chula Vista

Dear Ms. Pongeggi:

Harry Mathis
Councilmember,
City of San Diego

Thank you for the opportunity to review the above referenced notice. The notice does not identify any changes to local government organization associated with the project. Unless the project requires changes to local government organization, LAFCO will not be a responsible agency for environmental review.

Ronald W. Wootton
Vista Fire Protection District

Bud Pocklington
South Bay Irrigation District

If we may be of any further assistance, please contact me at (619) 531-5400.

Alternate Members

Sincerely,

Greg Cox
County Board of
Supervisors

Juan Vargas
Councilmember,
City of San Diego

SHIRLEY ANDERSON
Local Governmental Analyst

Jill D. Greer
City of Lemon Grove

Andrew J. Menshek
Padre Dam
Municipal Water District

Guy W. Winton III
Public Member

Executive Officer

Michael D. Ott

Counsel

John J. Sansone



Winston H. Hickox
Secretary for
Environmental
Protection

State Water Resources Control Board

Division of Clean Water Programs

1001 I Street • Sacramento, California 95814 • (916) 341-5700 FAX (916) 341-5707
Mailing Address: P.O. Box 944212 • Sacramento, California • 94244-2120
Internet Address: <http://www.swrcb.ca.gov>
Email Address: edwardsd@cwpswrcb.ca.gov



Gray Davis
Governor

DEC - 1 2000

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DEC - 7 2000

ADMIN

Ms. Marilyn R. F. Pongeggi
City of Chula Vista
276 Fourth Avenue
Chula Vista, CA 91910

Dear Ms. Pongeggi:

NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT (EIR), CITY OF CHULA VISTA (CITY), SALT CREEK AND WOLF CANYON SEWERS PROJECT (SCH NO. 2000111072)

Thank you for the opportunity to review the above document. The State Water Resources Control Board (SWRCB), Division of Clean Water Programs (Division) is responsible for administering the State Revolving Fund (SRF) which provides low interest loans for eligible wastewater treatment projects. We are enclosing a copy of the "Policy for Implementing the State Revolving Fund for Construction of Wastewater Treatment Facilities" for your information. This document includes the "Environmental Review Process Guidelines" (Appendix E). If you have any questions regarding the SRF Priority List, please contact Mr. Gus Atkins at (916) 341-5636.

If the City is seeking an SRF loan from the SWRCB to assist in financing the proposed project the SWRCB will be a responsible agency under the California Environmental Quality Act, and will use the final EIR when deciding whether to issue the loan. If this is the case, please provide us with a copy of the draft EIR as soon as it becomes available. In addition, we would appreciate notices of any meetings or hearings scheduled regarding the document and project approval.

The Division is required to consult directly with federal agencies responsible for implementing federal environmental laws and regulations for projects that involve an SRF loan, since it is partially funded by the Environmental Protection Agency. If you request an SRF loan, you will need to provide us with eight copies of the draft EIR so that we may initiate a 45-day federal review period. We will send you copies of any comments we receive during the federal review period for your response.

SRF loan applicants must comply with federal laws pertaining to cultural resources, particularly Section 106 of the National Historic Preservation Act. For projects intended to receive SRF assistance, please contact our Cultural Resources Officer, Ms. Cookie Hirn, at (916) 341-5690 to initiate the Section 106 process. She will consult with the State Historic Preservation Officer (SHPO) on your behalf at several points in the compliance process. She will first work with the City and the SHPO to establish the project's Area of Potential Effects (APE). After the APE is

Ms. Pongeggi

- 2 -

established, please provide documentation of the following: (1) background research for cultural resources—including a records search with the California Historical Resources Information System for an area one-half mile around the APE, and (2) consultation with the Native American Heritage Commission, interested Native Americans, local historical societies, and any other interested parties. Additional submittals, including a field survey by a qualified archaeologist and, if appropriate, an historical specialist may be required to document resource significance and/or project effects. When adequate information has been submitted, Ms. Hirn will review it for Section 106 compliance and will forward approved documents to the SHPO. The SHPO has a 30-day review period in which to comment or to concur that the process is complete. Please contact her at (916) 341-5690 with any questions you may have regarding the Section 106 process.

SRF projects are also subject to Section 7 of the Federal Endangered Species Act and must undergo review by the U.S. Fish and Wildlife Service (FWS). If this project has a potential to impact federally listed species, the FWS may require preparation of a Biological Assessment to evaluate the potential impacts and proposed mitigation. Biological surveys need to be conducted during the appropriate time of year and before completion of the EIR for undisturbed or sensitive areas impacted by the project.

As of January 31, 1994, SRF loan projects located in non-attainment areas may be required to meet the Federal General Conformity Rule for the Federal Clean Air Act (FCAA). Where a federal agency has delegated specific responsibilities to a state or local agency, the action is considered federal, and the state or local agency must make a conformity determination on the federal agency's behalf. A conformity determination can be made if: (1) facilities are sized to meet only the needs of current population projections that are used in the approved State Implementation Plan for air quality, and (2) construction and operation's emissions will be below "de minimis" levels.

Following, are my specific comments on the Notice of Preparation:

1. The EIR needs to address the availability of water supplies for the additional growth that will be accommodated by the project.
2. If a project will alleviate a potential constraint for growth, indirect impacts to land use, transportation, public services and natural resources such as water, air, soils, and biological resources need to be evaluated.
3. Since the project may involve conversion of agriculture land, the City may also need to prepare a Farmland Impact Conversion Analysis. Contact the U.S. Natural Resources Conservation Service for more information on this issue.

Ms. Pongeggi

- 3 -

Please contact me at (916) 341-5667 if you have any questions regarding the environmental review of this project.

Sincerely,



Diane Edwards
Environmental Services Unit

Enclosure

cc: Mr. Dat Quach
San Diego Regional Water
Quality Control Board
9771 Claremont Mesa Boulevard, Suite B
San Diego, CA 92124

Governor's Office of Planning & Research
State Clearinghouse
P.O. Box 3044
Sacramento, CA 95812-3044

NATIVE AMERICAN HERITAGE COMMISSION

915 CAPITOL MALL, ROOM 364

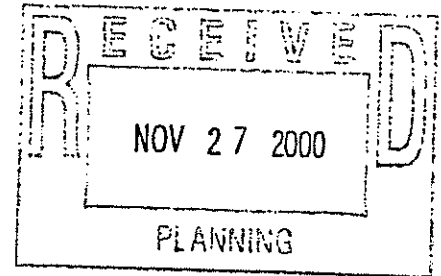
SACRAMENTO, CA 95814

(916) 653-4082

(916) 657-5390 - Fax



November 17, 2000



Marilyn R.F. Pongeggi
City of Chula Vista
276 Fourth Avenue
Chula Vista, CA 91910

RE: SCH# 2000111072, Salt Creek and Wold Canyon Sewers

Dear Ms. Pongeggi:

The Native American Heritage Commission has reviewed the above mentioned NOP. To adequately assess the project-related impact on archaeological resources, the Commission recommends the following action be required:

1. Contact the appropriate Information Center for a records search. The record search will determine:
 - Whether a part or all of the project area has been previously surveyed for cultural resources.
 - Whether any known cultural resources have already been recorded on or adjacent to the project area.
 - Whether the probability is low, moderate, or high that cultural resources are located within the project area.
 - Whether a survey is required to determine whether previously unrecorded cultural resources are present.
2. If an archaeological inventory survey is required, the final stage of is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
 - Required the report containing site significance and mitigation be submitted immediately to the planning department.
 - Required site forms and final written report be submitted within 3 months after work has been completed to the Information Center.
3. Contact the Native American Heritage Commission for:
 - A Sacred Lands File Check.
 - A list of appropriate Native American Contacts for consultation concerning the project site and assist in the mitigation measures.

Lack of surface evidence of archeological resources does not preclude the existence of archeological resources. Lead agencies should include provisions for accidentally discovered archeological resources during construction per California Environmental Quality Act (CEQA) §15064.5 (f). Health and Safety Code §7050.5 and Public Resources Code §5097.98 mandates the process to be followed in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery and should be included in all environmental documents. If you have any questions, please contact me at (916) 653-4040.

Sincerely,

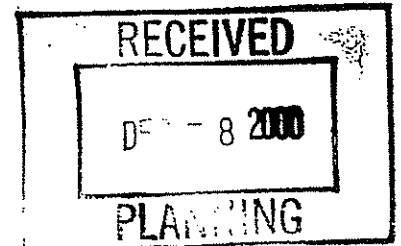
Rob Wood
Associate Governmental Program Analyst

CC: State Clearinghouse



San Diego County Archaeological Society
Environmental Review Committee

6 December 2000



To: Ms. Marilyn R. F. Pongeggi
Environmental Review Coordinator
Planning Department
City of Chula Vista
276 Fourth Avenue
Chula Vista, California 91910

Subject: Notice of Preparation of a Draft Program Environmental Impact Report
Salt Creek and Wolf Canyon Sewers

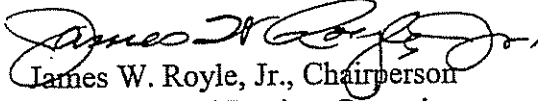
Dear Ms. Pongeggi:

Thank you for the subject Notice of Preparation for the subject project, received by this Society last month.

We are pleased to note the inclusion of cultural resources in the list of subject areas to be addressed in the DEIR, and look forward to reviewing it during the upcoming public comment period. To that end, please include us in the distribution of the DEIR, and also provide us with a copy of the cultural resources technical report(s).

SDCAS appreciates being included in the City's environmental review process for this project.

Sincerely,


James W. Royle, Jr., Chairperson
Environmental Review Committee

cc: SDCAS President
file

DEPARTMENT OF TRANSPORTATION

DISTRICT 11

P.O. BOX 85406, M.S. 50

SAN DIEGO, CA 92186-5406

PHONE: (619) 688-6954

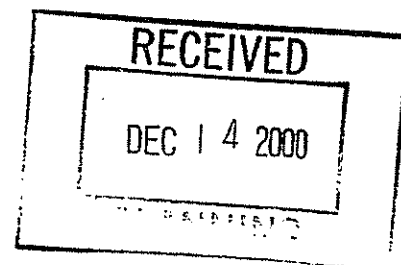
FAX: (619) 688-4299



December 12, 2000

11-SD-125 South

Ms. Marilyn Pongeggi
City of Chula Vista
Planning Department
276 Fourth Avenue
Chula Vista, CA 91910



Dear Ms. Pongeggi:

NOP for the Salt Creek and Wolf Canyon Sewers-SCH2000111072

Caltrans District 11 comments are as follows:

- Any work performed within Caltrans' right of way (R/W) will require an encroachment permit. For those portions of the project within the Caltrans' R/W, the permit application must be stated in both English and Metric units (English first, with Metric in parentheses). Information regarding encroachment permits may be obtained by contacting our Permits Office at (619) 688-6158. Early coordination with our agency is strongly advised for all encroachment permits.
- The sewer main will cross the future SR-125 R/W in the Otay River Valley. Before an encroachment permit can be granted, the City must provide environmental approval for the work within Caltrans' R/W. This includes an assessment of the potential environmental impacts caused by the work within the Caltrans' R/W, the acquisition of any needed permits and approvals from the resource agencies for the work, and a commitment to mitigate for the impacts associated with the work in Caltrans' R/W.
- The following issues are likely to come up during the encroachment permit process. It would help facilitate the encroachment permit process if the city addresses the impacts to the Caltrans' R/W in the relevant sections of the project's EIR.

Biological Resources

- The City should analyze and discuss the direct and indirect impacts to biological resources within the Caltrans' R/W. The City would be required to mitigate for any impacts to biological resources caused by the project.
- It appears that the sewer main may be within the designated critical habitat for the coastal California gnatcatcher. If this is true, any action caused by the sewer construction that is likely to result in the destruction or adverse modification of the critical habitat would require approval by the U.S. Fish and Wildlife Service. Before an encroachment permit could be approved, we would need to see written approval from the U.S. Fish and Wildlife Service which includes the work within the Caltrans' R/W.
- Any impacts to State listed species would require coordination with California Department of Fish and Game.

Permitting Concerns

- The City would be responsible for obtaining all the necessary permits for any work within the Caltrans' R/W. Before an encroachment permit could be granted, we would need to see evidence of approval by the U.S. Army Corps of Engineers, U. S. Fish and Wildlife Service, California Department of Fish and Game, Regional Water Quality Control Board, and any other agency having jurisdiction over the work within Caltrans' R/W. This evidence would include permits and/or concurrence letters.

Cultural Resources

- It appears two sites are located in close proximity of the proposed sewer main alignment with Caltrans R/W (CA-SDI-12,809 and CA-SDI-4739). The City should analyze and discuss the direct and indirect impacts to cultural resources within the Caltrans R/W. The City would be responsible for mitigation and impacts to cultural resources.

Aesthetics

- Close coordination with Caltrans' staff, including the District Landscape Architect and Environmental Staff, should occur to ensure that the aesthetics of the Caltrans' facility are maintained.

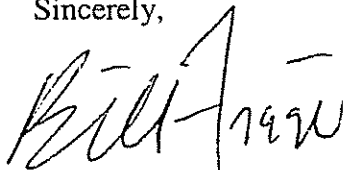
Ms. Marilyn Pongeggi
December 12, 2000
Page 3

Other

- The current advanced planning study for the SR-125 Otay River Bridge shows bridge pier at approximately every 300 feet across the Otay River Valley. The bridge pier locations in the advanced planning study are not located on the existing dirt road that the sewer line appears to be following (see enclosed drawing). However, there is a proposed bridge footing that will be located approximately 20 feet north of the existing dirt road in question. The designer of the sewer line should coordinate with California Transportation Ventures (CTV) and Caltrans to avoid potential conflicts between the proposed sewer line and the bridge footing for the SR-125 Otay River Bridge.
- The Wolf Canyon branch of the proposed sewer appears to terminate just prior to crossing SR-125 (see enclosed SR-125 alignment). As the alignment is refined, the developer should coordinate with Caltrans to avoid possible conflicts.

Thank you for the opportunity to comment on the NOP. We look forward to continued coordination on this project. Our contact person for SR-125 South is Laurie Berman, Project Manager, at (619) 688-3631.

Sincerely,

A handwritten signature in black ink, appearing to read "Bill Figge", with a stylized flourish extending from the end.

BILL FIGGE, Chief
Development Review and Public Transportation Branch



Department of Toxic Substances Control

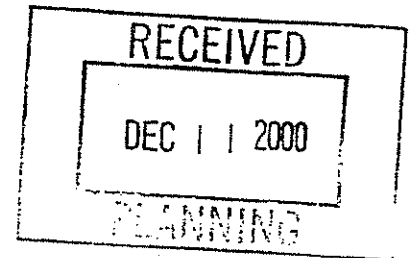


Edwin F. Lowry, Director
5796 Corporate Avenue
Cypress, California 90630

Winston H. Hickox
Agency Secretary
California Environmental
Protection Agency

Gray Davis
Governor

December 6, 2000



Ms. Marilyn R. F. Pongeggi
Environmental Review Coordinator
City of Chula Vista Planning Department
276 Fourth Avenue
Chula Vista, California 91910

NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT FOR THE SALT CREEK AND WOLF CANYON SEWERS (SCH #2000111072)

Dear Ms. Pongeggi:

The Department of Toxic Substances Control (DTSC) has received your Notice of Preparation (NOP) of a draft Environmental Impact Report (EIR) for the above-mentioned Project.

Based on the review of the document, DTSC's comments are as follows:

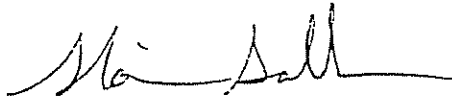
- 1) The NOP indicates the draft EIR will discuss the environmental issues related to aesthetics, air quality, biological resources, cultural resources, geology and soils, hydrology and water quality, land use and planning, noise, and traffic/circulation. As part of the environmental review process, the draft EIR needs to discuss public health and safety including hazards and hazardous materials.
- 2) The draft EIR needs to identify and determine whether current or historic uses at the Project site have resulted in any release of hazardous wastes/substances at the Project area.
- 3) The draft EIR needs to identify any known or potentially contaminated site within the proposed Project area. For all identified sites, the draft EIR needs to evaluate whether conditions at the site pose a threat to human health or the environment.
- 4) The draft EIR should identify the mechanism to initiate any required investigation and/or remediation for any site that may require remediation, and which government agency will provide appropriate regulatory oversight.

Ms. Marilyn R. F. Pongeggi
December 6, 2000
Page 2

- 5) If during construction of the project, soil contamination is suspected, construction in the area should stop and appropriate Health and Safety procedures should be implemented. If it is determined that contaminated soil exists, the draft EIR should identify how any required investigation and/or remediation will be conducted, and which government agency will provide appropriate regulatory oversight.

DTSC provides guidance for the Preliminary Endangerment Assessment (PEA) preparation and cleanup oversight through the Voluntary Cleanup Program (VCP). For additional information on the VCP or to meet/discuss this matter further, please contact Mr. Johnson P. Abraham, Project Manager at (714) 484-5476 or me at (714) 484-5463.

Sincerely,



Haissam Y. Salloum, P.E.
Unit Chief
Southern California Cleanup Operations Branch
Cypress Office

cc: Governor's Office of Planning and Research
State Clearinghouse
P.O. Box 3044
Sacramento, California 95812-3044

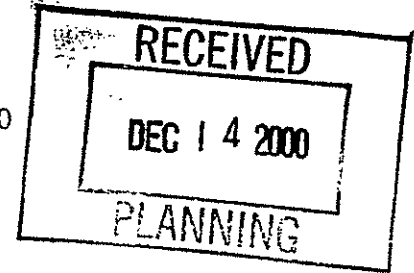
Mr. Guenther W. Moskat, Chief
Planning and Environmental Analysis Section
CEQA Tracking Center
Department of Toxic Substances Control
P.O. Box 806
Sacramento, California 95812-0806

DEPARTMENT OF FISH AND GAME

South Coast Region
4949 Viewridge Avenue
San Diego, California 92123
(858) 467-4201
(858) 467-4235 FAX



December 8, 2000



Ms. Marilyn R. F. Pongeggi
City of Chula Vista
276 Fourth Avenue
Chula Vista, CA 91910

**Comments on the Notice of Preparation of a Draft Environmental Impact Report for the Salt
Creek and Wolf Canyon Sewers in the City of Chula Vista, California
(SCH#2000111072)**

Dear Ms. Lawrence:

The Department of Fish and Game (Department) appreciates this opportunity to comment on the above-referenced project, relative to impacts to biological resources. To enable Department staff to adequately review and comment on the proposed project, we recommend the following information be included in the Draft Environmental Impact Report (DEIR):

1. A complete assessment of the flora and fauna within and adjacent to the project area, with particular emphasis upon identifying endangered, threatened, and locally unique species and sensitive habitats.
 - a. A thorough assessment of rare plants and rare natural communities, following the Department's May 1984 Guidelines (revised August 1997) for Assessing Impacts to Rare Plants and Rare Natural Communities (Attachment 1).
 - b. A complete assessment of sensitive fish, wildlife, reptile, and amphibian species. Seasonal variations in use of the project area should also be addressed. Focused species-specific surveys, conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable, are required. Acceptable species-specific survey procedures should be developed in consultation with the Department and the U.S. Fish and Wildlife Service.
 - c. Rare, threatened, and endangered species to be addressed should include all those which meet the California Environmental Quality Act (CEQA) definition (see CEQA Guidelines, § 15380).
 - d. The Department's California Natural Diversity Data Base in Sacramento should be contacted at (916) 327-5960 to obtain current information on any previously reported sensitive species and habitat, including Significant Natural Areas identified under Chapter 12 of the Fish and Game Code.

Ms. Marilyn R. F. Pongeggi

November 8, 2000

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2. A thorough discussion of direct, indirect, and cumulative impacts expected to adversely affect biological resources, with specific measures to offset such impacts.
 - a. CEQA Guidelines, § 15125(a), direct that knowledge of the regional setting is critical to an assessment of environmental impacts and that special emphasis should be placed on resources that are rare or unique to the region.
 - b. Project impacts should be analyzed relative to their effects on off-site habitats. Specifically, this should include nearby public lands, open space, adjacent natural habitats, and riparian ecosystems. Impacts to and maintenance of wildlife corridor/movement areas, including access to undisturbed habitat in adjacent areas, should be fully evaluated and provided.
 - c. The zoning of areas for development projects or other uses that are nearby or adjacent to natural areas may inadvertently contribute to wildlife-human interactions. A discussion of possible conflicts and mitigation measures to reduce these conflicts should be included in the environmental document.
 - d. A cumulative effects analysis should be developed as described under CEQA Guidelines, § 15130. General and specific plans, as well as past, present, and anticipated future projects, should be analyzed relative to their impacts on similar plant communities and wildlife habitats.
 - e. If applicable, the document should include an analysis of the effect that the project may have on completion and implementation of regional and/or subregional conservation programs. Under § 2800-§ 2840 of the Fish and Game Code, the Department, through the Natural Communities Conservation Planning (NCCP) program, is coordinating with local jurisdictions, landowners, and the Federal Government to preserve local and regional biological diversity. Coastal sage scrub is the first natural community to be planned for under the NCCP program. The Department recommends that the lead agency ensure that the development of this and other proposed projects do not preclude long-term preserve planning options and that projects conform with other requirements of the NCCP program. Jurisdictions participating in the NCCP program should assess specific projects for consistency with the NCCP Conservation Guidelines. Additionally, the jurisdictions should quantify and qualify: 1) the amount of coastal sage scrub within their boundaries; 2) the acreage of coastal sage scrub habitat removed by individual projects; and 3) any acreage set aside for mitigation. This information should be kept in an updated ledger system.
3. A range of alternatives should be analyzed to ensure that alternatives to the proposed project

Ms. Marilyn R. F. Pongeggi

November 8, 2000

Page 3

are fully considered and evaluated. A range of alternatives which avoid or otherwise minimize impacts to sensitive biological resources should be included. Specific alternative locations should also be evaluated in areas with lower resource sensitivity where appropriate.

- a. Mitigation measures for project impacts to sensitive plants, animals, and habitats should emphasize evaluation and selection of alternatives which avoid or otherwise minimize project impacts. Off-site compensation for unavoidable impacts through acquisition and protection of high-quality habitat elsewhere should be addressed.
 - b. The Department considers Rare Natural Communities as threatened habitats having both regional and local significance. Thus, these communities should be fully avoided and otherwise protected from project-related impacts (Attachment 2).
 - c. The Department generally does not support the use of relocation, salvage, and/or transplantation as mitigation for impacts to rare, threatened, or endangered species. Department studies have shown that these efforts are experimental in nature and largely unsuccessful.
4. A California Endangered Species Act (CESA) Permit must be obtained, if the project has the potential to result in "take" of species of plants or animals listed under CESA, either during construction or over the life of the project. CESA Permits are issued to conserve, protect, enhance, and restore State-listed threatened or endangered species and their habitats. Early consultation is encouraged, as significant modification to a project and mitigation measures may be required in order to obtain a CESA Permit. Revisions to the Fish and Game Code, effective January 1998, may require that the Department issue a separate CEQA document for the issuance of a 2081 permit unless the project CEQA document addresses all project impacts to listed species and specifies a mitigation monitoring and reporting program that will meet the requirements of a 2081 permit. For these reasons, the following information is requested:
- a. Biological mitigation monitoring and reporting proposals should be of sufficient detail and resolution to satisfy the requirements for a CESA Permit.
 - b. A Department-approved Mitigation Agreement and Mitigation Plan are required for plants listed as rare under the Native Plant Protection Act.
5. The Department has responsibility for wetland and riparian habitats and opposes any alteration of a natural watercourse that would result in a reduction of wetland acreage or wetland habitat values. Alterations include, but are not limited to: conversion to subsurface drains, placement of fill or building of structures within the wetland and channelization or removal of materials from the streambed. All wetlands and watercourses, whether intermittent or perennial, should be retained and provided with substantial setbacks which

Ms. Marilyn R. F. Pongeggi

November 8, 2000

Page 4

preserve the riparian and aquatic values and maintain their value to on-site and off-site wildlife populations. A formal wetland delineation following U.S. Army Corps of Engineers (ACE) protocol may also be necessary prior to any construction in wetland or riparian habitats. Results should be included in the EIR. Please note, however, that wetland and riparian habitats subject to the Department's authority may extend beyond the areas identified in the ACE delineation.

- a. The Department may require a Lake or Streambed Alteration Agreement, pursuant to Section 1600 *et seq.* of the Fish and Game Code, with the applicant prior to the applicant's commencement of any activity that will substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank (which may include associated riparian resources) of a river, stream or lake, or use material from a streambed. The Department's issuance of a Lake or Streambed Alteration Agreement for a project that is subject to CEQA will require CEQA compliance actions by the Department as a responsible agency. The Department as a responsible agency under CEQA, may consider the local jurisdiction's (lead agency) Negative Declaration or EIR for the project. To minimize additional requirements by the Department pursuant to Section 1600 *et seq.* and/or under CEQA, the document should fully identify the potential impacts to the lake, stream or riparian resources and provide adequate avoidance, mitigation, monitoring and reporting commitments for issuance of the agreement. A Streambed Alteration Agreement form may be obtained by writing to The Department of Fish and Game, 4949 Viewridge Avenue, San Diego, CA 92123 or by calling (858) 636-3160.

The Department holds regularly scheduled pre-project planning/early consultation meetings. To make an appointment, please call our office at (858) 636-3160.

Thank you for this opportunity to comment. Questions regarding this letter and further coordination on these issues should be directed to Kim Marsden at (858) 467-4229.

Sincerely,



William E. Tippetts
Habitat Conservation Supervisor

Attachments

Ms. Marilyn R. F. Pongeggi

November 8, 2000

Page 5

cc: Department of Fish and Game
File
San Diego

U.S. Fish and Wildlife Service
Carlsbad

U.S. Army Corps of Engineers
Los Angeles

State Clearinghouse
Sacramento

Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities

State of California
THE RESOURCES AGENCY
Department of Fish and Game
December 9, 1983
Revised May 8, 2000

The following recommendations are intended to help those who prepare and review environmental documents determine when a botanical survey is needed, who should be considered qualified to conduct such surveys, how field surveys should be conducted, and what information should be contained in the survey report. The Department may recommend that lead agencies not accept the results of surveys that are not conducted according to these guidelines.

1. Botanical surveys are conducted in order to determine the environmental effects of proposed projects on all rare, threatened, and endangered plants and plant communities. Rare, threatened; and endangered plants are not necessarily limited to those species which have been "listed" by state and federal agencies but should include any species that, based on all available data, can be shown to be rare, threatened, and/or endangered under the following definitions:

A species, subspecies, or variety of plant is "endangered" when the prospects of its survival and reproduction are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, over-exploitation, predation, competition, or disease. A plant is "threatened" when it is likely to become endangered in the foreseeable future in the absence of protection measures. A plant is "rare" when, although not presently threatened with extinction, the species, subspecies, or variety is found in such small numbers throughout its range that it may be endangered if its environment worsens.

Rare natural communities are those communities that are of highly limited distribution. These communities may or may not contain rare, threatened, or endangered species. The most current version of the California Natural Diversity Database's List of California Terrestrial Natural Communities may be used as a guide to the names and status of communities.

2. It is appropriate to conduct a botanical field survey to determine if, or to the extent that, rare, threatened, or endangered plants will be affected by a proposed project when:
 - a. Natural vegetation occurs on the site, it is unknown if rare, threatened, or endangered plants or habitats occur on the site, and the project has the potential for direct or indirect effects on vegetation; or
 - b. Rare plants have historically been identified on the project site, but adequate information for impact assessment is lacking.
3. Botanical consultants should possess the following qualifications:
 - a. Experience conducting floristic field surveys;
 - b. Knowledge of plant taxonomy and plant community ecology;
 - c. Familiarity with the plants of the area, including rare, threatened, and endangered species;
 - d. Familiarity with the appropriate state and federal statutes related to plants and plant collecting; and,
 - e. Experience with analyzing impacts of development on native plant species and communities.
4. Field surveys should be conducted in a manner that will locate any rare, threatened, or endangered species that may be present. Specifically, rare, threatened, or endangered plant surveys should be:
 - a. Conducted in the field at the proper time of year when rare, threatened, or endangered species are both evident and identifiable. Usually, this is when the plants are flowering.

When rare, threatened, or endangered plants are known to occur in the type(s) of habitat present in the project area, nearby accessible occurrences of the plants (reference sites) should be observed to determine that the species are identifiable at the time of the survey.

- b. Floristic in nature. A floristic survey requires that every plant observed be identified to the extent necessary to determine its rarity and listing status. In addition, a sufficient number of visits spaced throughout the growing season are necessary to accurately determine what plants exist on the site. In order to properly characterize the site and document the completeness of the survey, a complete list of plants observed on the site should be included in every botanical survey report.
 - c. Conducted in a manner that is consistent with conservation ethics. Collections (voucher specimens) of rare, threatened, or endangered species, or suspected rare, threatened, or endangered species should be made only when such actions would not jeopardize the continued existence of the population and in accordance with applicable state and federal permit requirements. A collecting permit from the Habitat Conservation Planning Branch of DFG is required for collection of state-listed plant species. Voucher specimens should be deposited at recognized public herbaria for future reference. Photography should be used to document plant identification and habitat whenever possible, but especially when the population cannot withstand collection of voucher specimens.
 - d. Conducted using systematic field techniques in all habitats of the site to ensure a thorough coverage of potential impact areas.
 - e. Well documented. When a rare, threatened, or endangered plant (or rare plant community) is located, a California Native Species (or Community) Field Survey Form or equivalent written form, accompanied by a copy of the appropriate portion of a 7.5 minute topographic map with the occurrence mapped, should be completed and submitted to the Natural Diversity Database. Locations may be best documented using global positioning systems (GPS) and presented in map and digital forms as these tools become more accessible.
5. Reports of botanical field surveys should be included in or with environmental assessments, negative declarations and mitigated negative declarations, Timber Harvesting Plans (THPs), EIR's, and EIS's, and should contain the following information:
- a. Project description, including a detailed map of the project location and study area.
 - b. A written description of biological setting referencing the community nomenclature used and a vegetation map.
 - c. Detailed description of survey methodology.
 - d. Dates of field surveys and total person-hours spent on field surveys.
 - e. Results of field survey including detailed maps and specific location data for each plant population found. Investigators are encouraged to provide GPS data and maps documenting population boundaries.
 - f. An assessment of potential impacts. This should include a map showing the distribution of plants in relation to proposed activities.
 - g. Discussion of the significance of rare, threatened, or endangered plant populations in the project area considering nearby populations and total species distribution.
 - h. Recommended measures to avoid impacts.
 - i. A list of all plants observed on the project area. Plants should be identified to the taxonomic level necessary to determine whether or not they are rare, threatened or endangered.
 - j. Description of reference site(s) visited and phenological development of rare, threatened, or endangered plant(s).
 - k. Copies of all California Native Species Field Survey Forms or Natural Community Field Survey Forms.
 - l. Name of field investigator(s).
 - j. References cited, persons contacted, herbaria visited, and the location of voucher specimens.

ATTACHMENT 2

Sensitivity of Top Priority Rare Natural Communities in Southern California*

Sensitivity rankings are determined by the Department of Fish and Game, California Natural Diversity Data Base and based on either number of known occurrences (locations) and/or amount of habitat remaining (acreage). The three rankings used for these top priority rare natural communities are as follows:

- Less than 6 known locations and/or on less than 2,000 acres of habitat remaining
- Occurs in 6-20 known locations and/or 2,000-10,000 acres of habitat remaining
- Occurs in 21-100 known locations and/or 10,000-50,000 acres of habitat remaining

The number to the right of the decimal point after the ranking refers to degree of threat posed to that natural community regardless of the ranking. example:

S1.1 = very threatened
S2.2 = threatened
S3.3 = no current threats known

Sensitivity Rankings (February 1992)

Community Name

Mojave Riparian Forest	Southern Dune Scrub
Sonoran Cottonwood Willow Riparian	Southern Coastal Bluff Scrub
Mesquite Bosque	Maritime Succulent Scrub
Elephant Tree Woodland	Riversidean Alluvial Fan Sage Scrub
Crucifixion Thorn Woodland	Southern Maritime Chaparral
Allthorn Woodland	Valley Needlegrass Grassland
Arizonan Woodland	Great Basin Grassland
Southern California Walnut Forest	Mojave Desert Grassland
Mainland Cherry Forest	Pebble Plains
Southern Bishop Pine Forest	Southern Sedge Bog
Torrey Pine Forest	Cismontane Alkali Marsh
Desert Mountain White Fir Forest	

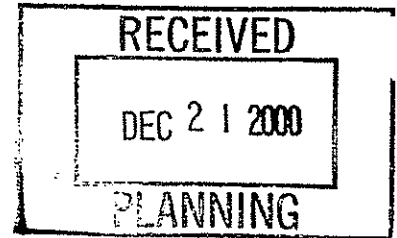
Sensitivity Rankings (Cont.)

Community Name

- 1.2 Southern Foredunes
Mono Pumice Flat
Southern Interior Basalt Fl. Vernal Pool
- 2.1 Venturan Coastal Sage Scrub
Diegan Coastal Sage Scrub
Riversidean Upland Coastal Sage Scrub
Riversidean Desert Sage Scrub
Sagebrush Steppe
Desert Sink Scrub
Mafic Southern Mixed Chaparral
San Diego Mesa Hardpan Vernal P.
San Diego Mesa Claypan Vernal P.
Alkali Meadow
Southern Coastal Salt Marsh
Coastal Brackish Marsh
Transmontane Alkali Marsh
- Coastal and Valley Freshwater Marsh
S. Arroya Willow Riparian Forest
Southern Willow Scrub
- Modoc-G.Bas. Cottonwood Willow Rip.
Modoc-Great Basin Riparian Scrub
Mojave Desert Wash Scrub
Engelmann Oak Woodland
Open Engelmann Oak Woodland
Closed Engelmann Oak Woodland
Island Oak Woodland
California Walnut Woodland
Island Ironwood Forest
Island Cherry Forest
S. Interior Cypress Forest
Bigcone Spruce-Canyon Oak Forest
- S2.2 Active Coastal Dunes
Active Desert Dunes
Stab. and Part. Stab. Desert Dunes
Stab. and Part. Stab. Desert Sandfield
Mojave Mixed Steppe
Transmontane Freshwater Marsh
Coulter Pine Forest
S. California Fellfield
White Mountains Fellfield
- S2.3 Bristlecone Pine Forest
Limber Pine Forest



THE CITY OF SAN DIEGO



December 14, 2000

Marilyn R.F. Pongeggi, Environmental Review Coordinator
City of Chula Vista Planning Department
276 Fourth Avenue
Chula Vista, CA 91910

Dear Ms. Pongeggi:

Subject: Comments on Proposed Salt Creek and Wolf Canyon Sewers West of Upper and Lower Otay Reservoirs

We have reviewed the November 8, 2000, Notice of Preparation received in mid November 2000 for the subject project. It appears that the EIR will address most issues of concern to Otay Reservoir watershed and water quality protection. The Otay Ranch and other developing community sewer facilities appear to be within the Salt Creek and Wolf Canyon drainage area in eastern Chula Vista, with reaches 1 to 5 to the west of Upper and Lower Otay Reservoirs.

Our comments are as follows:

1. Please confirm that this project is not in a source water protection area or zone and its operation and maintenance will not cause degradation of water quality to the drinking water reservoirs.
2. The developer shall identify the potential for the proposed sewer system to leak, overflow draining or filter to Upper and Lower Otay reservoirs.
3. To what extent would the proposed sewer system and/or the other developing community sewer facilities affect the Otay watershed? The proposed project may not be in the Otay watershed but some associated improvement projects which may connect to the proposed system are, e.g., Rolling Hills Ranch, Eastlake II and III, the Olympic Training Center.

Of most concern are potential water quality impacts from sewer main segment reaches 1 to 5, along with policy options 1 and 2 and the sewer lateral west of the reservoirs. It appears reach 1 is the existing 10" to 48" pipeline conveying about 1.2 to 12 million gallons per day of sewage from associated improvement projects.

Thank you again for including us in the plan review process for issues on drinking water

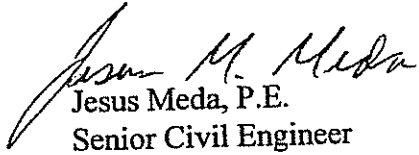


Operations Division


Water Department • 2797 Caminito Chollas • San Diego, CA 92105-5097
Tel (619) 527-7470 Fax (619) 527-7412

protection. We look forward to discussing watershed issues in an upcoming meeting. For questions, please contact Arlene Dea Deeley, Associate Engineer-Civil, at (619) 527-8065 or at add@sdcity.sannet.gov.

Sincerely,


Jesus Meda, P.E.
Senior Civil Engineer

AD

cc:  Vic Bienes, Engineering Program Manager, Water Operations Division
Bob Collins, Real Estate Contracts Manager
Mike Gonzales, Senior Planner, Water Policy, CIP Finance and Planning Division
Jeffery Pasek, Senior Biologist, Water Quality Lab
Shahin Moshref, Senior Civil Engineer, Planning and Development Review Department
Chris Gascon, Associate Civil Engineer, Planning and Development Review Department

Appendix B

Biological Resources Technical Report

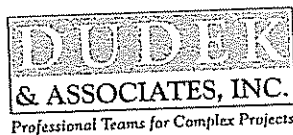
**BIOLOGICAL RESOURCES TECHNICAL REPORT
FOR
SALT CREEK INTERCEPTOR AND WOLF CANYON TRUNK
SEWER PROJECT
CHULA VISTA, CALIFORNIA**

Prepared for:

**CITY OF CHULA VISTA
PUBLIC WORKS DEPARTMENT**

276 Fourth Avenue
Chula Vista, California 91910

Prepared by:



605 Third Street
Encinitas, California 92024
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(760) 942-5147

January 2001

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Salt Creek Interceptor and Wolf Canyon Trunk Sewer Project

EXECUTIVE SUMMARY

The Salt Creek Interceptor and Wolf Canyon Trunk Sewer Project is proposed to provide sewage conveyance for approved development within the Salt Creek and Wolf Canyon drainage basins in the eastern portion of the City of Chula Vista, California. The sewer would begin at Otay Lakes Road near Salt Creek, travel south parallel with Salt Creek, then westward on the north bank of the Otay River Valley, through developed regions of Chula Vista and terminating immediately west of Interstate 5. The biological analysis of the project area included a literature review, database compilation, and field reconnaissance. Focused surveys were conducted for rare plants and a delineation of waters of the United States was also conducted.

The purpose of this report is to describe the biological conditions of the project area, with specific regard to sensitive and/or regulated biological resources.

Upland vegetation communities identified in the project corridor include: annual (non-native) grassland, agriculture, broom baccharis scrub, disturbed broom baccharis scrub, coastal sage scrub, disturbed coastal sage scrub, disturbed habitat, and southern cactus scrub. Wetland habitats mapped include: mixed riparian scrub, cismontane alkali marsh, cismontane alkali marsh/freshwater marsh, mule fat scrub, tamarisk scrub, and disturbed wetland. A developed land category was mapped in urbanized areas. In addition to these wetland habitats, several unvegetated waters of the U.S. intersect the staff recommended alignment corridor.

The following sensitive plant species were identified within the project corridor and potential staging areas: California adolphia (*Adolphia californica*), San Diego sunflower (*Viguiera laciniata*), southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*), San Diego barrel cactus (*Ferocactus viridescens*), San Diego marsh-elder (*Iva hayesiana*), snake cholla (*Opuntia parryi* var. *serpentina*), South Coast saltscale (*Atriplex pacifica*), and variegated dudleya (*Dudleya variegata*). Although no general or focused surveys for animal species were conducted along the alignment, information regarding sensitive species locations and potential to occur was gathered from existing databases, an understanding of existing habitat and knowledge of the vicinity. The eastern portion of the project area potentially functions as a regional corridor or linkage connecting open space areas north and south of the Otay River.

The proposed project will permanently impact between 2.2 and 3.2 acres of sensitive upland

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habitat comprised of those habitats listed above and between 0.29 and 0.35 acre of waters of the U.S., including wetlands as listed above. Temporary impacts associated with construction include between 3.4 and 4.4 acres of sensitive upland habitat and between 0.31 and 0.39 acre of waters of the U.S., including wetlands. All sensitive plant species identified within the project construction corridor are considered to be directly and permanently impacted by project implementation. Impacts to sensitive wildlife are anticipated to include a suite of species typically found in this region within grassland, shrub and wetland habitats. Potential impacts to these sensitive animal species include direct permanent impacts due to habitat loss and temporary impacts due to construction activity.

The recommended mitigation measures proposed in this document differ for the different permitting scenarios by which this project will receive approval either through the City of Chula Vista Subarea Plan of the Multiple Species Conservation Program (MSCP) or through the federal and/or state Endangered Species Act(s). Under the Subarea Plan, mitigation measures include: revegetation of temporary impact areas, a 2:1 ratio of habitat creation for permanent impacts to wetlands, restoration of pre-construction contours in areas containing unvegetated waters of the U.S., avoidance of narrow endemic plants (5% of population of each species), avoidance of impacts to quino checkerspot butterfly (*Euphydryas editha quino*), and avoidance of construction noise near nesting bird sites during the breeding season. Under the Endangered Species Act permitting scenario, the following mitigation measures are recommended: preservation of sensitive upland habitats at a 1:1 ratio for sage scrub, 3:1 for southern cactus scrub, and 1:1 for nesting pairs of California gnatcatcher (*Poliioptila californica*), revegetation of temporary impact areas, 2:1 habitat creation for permanent impacts to wetlands, restoration of pre-construction contours in areas containing unvegetated waters of the U.S., salvage sensitive plants for placement in preserved areas, avoidance of impacts to quino checkerspot butterfly, and avoidance of construction noise near nesting bird sites during the breeding season.

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Salt Creek Interceptor and Wolf Canyon Trunk Sewer Project

1.0 INTRODUCTION

The Salt Creek Interceptor and Wolf Canyon Trunk Sewer Project is proposed to provide sewage conveyance for approved development within the Salt Creek and Wolf Canyon drainage basins in the eastern portion of the City of Chula Vista, California. Although referred to as the Salt Creek and Wolfe Canyon Sewer throughout this report, the Wolf Canyon segment of the sewer has not been designed and therefore was not evaluated for biological resources. This report includes studies and determinations based on the alignment of the Salt Creek and Wolf Canyon Sewer, excluding the Wolf Canyon segment. The sewer would begin at Otay Lakes Road near Salt Creek, travel south parallel with Salt Creek, then westward on the north bank of the Otay River Valley through developed regions of Chula Vista, and terminating immediately west of Interstate 5. The sewer consists of nine reaches, starting in the east and ending in the west.

The purpose of this report is to analyze the biological conditions of the project area. As part of this process, an alternatives analysis was conducted in the design-phase of this project to facilitate avoidance and minimization of environmental impacts, particularly wetland impacts. The analysis resulted in the development of a staff recommended alignment alternative with two policy option alignments in the eastern portion of the project. This report will identify the methods and results of various surveys, potential biological impacts, and recommended mitigation measures as they pertain to the staff recommended alignment alternative and policy option alignments.

2.0 METHODS AND SURVEY LIMITATIONS

The existing biological conditions in the proposed sewer project area were reviewed through a literature review, database compilation, and field reconnaissance. Focused surveys were conducted for rare plants and a formal wetland delineation was performed. Additional surveys for plants and sensitive animals are planned for Spring 2001.

2.1 Survey Area and Mapping Sources

The surveys conducted in the accumulation of the biological resources database for the recommended alignment alternative and two policy options of the Salt Creek and Wolf Canyon Sewer cover a corridor approximately 40-foot-wide that is centered on the alignment. In addition to the alignment alternatives, several potential staging areas were surveyed for

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existing biological conditions. The 40-foot-wide corridor and potential staging areas represent the entire area of potential effect for the project.

The Salt Creek and Wolf Canyon sewer is described in multiple reaches. Reach 1 has already been constructed and Reach 2 has been studied and its alignment approved. Therefore these two reaches were not surveyed and are not discussed in this report. Reaches 3 and 4 were studied as part of the Otay Ranch Village 11 residential development project. Upland and wetland habitat and wildlife surveys for this area were conducted by DUDEK in Spring 1999. The remainder of the project (Reaches 5-9 and Wolf Canyon), south and west of the Village 11 southern parcel boundary limit, was surveyed and mapped in December 1999 by DUDEK. This surveying/mapping included verification of the existing vegetation map and a jurisdictional wetland delineation based on methods described below. Please note that a portion of Reach 4 has already been built; the reach was studied and is included in the results section of this report.

2.2 Constraints Analysis

The proposed pipeline alignment area was surveyed for potential biological constraints in Fall 1999 via three methods: 1) a literature review of existing data; 2) a brief field reconnaissance survey to identify specific biological resources; and 3) review by regional biological resources experts.

Sensitive biological resources present or potentially present onsite were identified through a literature search using the following sources: U.S. Fish and Wildlife Service (1989, 1990, 1991, 1999), California Department of Fish and Game (1980, 1986, 1987), California Native Plant Society's Inventory of Rare and Endangered Vascular Plants (Skinner and Pavlik 1994), Murphy (1990), the vegetation and sensitive species mapping performed for the Multiple Species Conservation Program (OGDEN 1994), Biological Resources Report for New Millennium Project (DUDEK 1999) and Otay Ranch Biological Resources Inventory Report (RECON 1991). General information regarding wildlife species present in the region was obtained from Unitt (1984) for birds, Bond (1977) for mammals, Stebbins (1985) for reptiles and amphibians, and Emmel and Emmel (1973) for butterflies.

Aerial and orthographic photographs of the project alignment were reviewed by DUDEK biologist Harold A. Wier, to determine likely biological constraints.

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The biological constraints field reconnaissance of the proposed pipeline alignment was conducted by DUDEK biologist Vipul R. Joshi on August 12, 1999. The survey consisted of checking areas previously identified as having potential biological resources based on the literature and database review and also inspecting the entire alignment for potential biological constraints such as jurisdictional waters of the U.S., sensitive upland habitats, and sensitive plants and animals. The survey was conducted by foot or in a vehicle, where appropriate, under favorable weather conditions. A 600-scale (1"=600') aerial photograph was used for the portion of the alignment between I-5 and I-805. A 400-scale (1"=400') digital orthographic quarter quad (DOQQ) map was used for the other portions of the alignment. The DOQQ maps contained Multiple Species Conservation Program (MSCP) vegetation boundaries which were revised as appropriate in the field according to observations.

2.3 Upland and Wetland Vegetation Mapping

Vegetation community mapping was taken from the MSCP, with the exception of the Village 11 project area which was mapped by DUDEK in Spring 1999. The final vegetation community mapping presented in this report represents slight modifications to these vegetation maps, based on recent field observations during this study. Plant community classifications used in this report follow Holland (1986), with modifications or additions to accommodate the lack of conformity of the observed communities to those of Holland.

The wetland delineations conducted for the Village 11 project in Spring 1999 and the remainder of the alignments, surveyed in December 1999 and January 2000, were primarily conducted by Mr. Joshi. Both delineations were reviewed by DUDEK senior biologist Sherri Miller. Modifications to upland vegetation mapping were also completed by Mr. Joshi and reviewed by Ms. Miller in December 1999 and January 2000.

Wetlands under the jurisdiction of the U. S. Army Corps of Engineers (ACOE) and California Department of Fish and Game (CDFG) were mapped in the field onto a 200-scale (1"=200') topographic and digital orthographic map. The ACOE jurisdictional wetland delineation was conducted in accordance with the *1987 U.S. Army Corps of Engineers Wetland Delineation Manual (TR Y-87-1)*; hydrology, vegetation, and soils were examined at potential wetland sites. CDFG jurisdictional waters were identified by the presence of one or more of the ACOE criteria where associated with a stream channel. Munsell Soil Color Charts were used to determine soil chroma and value and the indicator status of the plant species was determined by using the *U.S. Fish and Wildlife Service National List of Plant Species that Occur*

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in Wetlands: California (Region 1). Jurisdictional waters were delineated in the field by using a Global Positioning System (GPS) backpack unit, pacing or digital orthographic/topographic feature interpretation; these polygons were later downloaded or digitized into an ArcCAD file.

2.4 Rare Plant Survey

Mr. Joshi conducted a rare plant survey on May 23 and 25, 2000. An approximately 40-foot wide corridor centered on the proposed staff recommended alternative was surveyed for the presence of rare and sensitive plant species. In addition to the 40-foot wide corridor, all potential staging areas were surveyed for rare plants. Weather conditions and seasonal timing were appropriate for the detection of most potentially occurring rare plants. Blooming annuals, such as Otay tarplant (*Deinandra conjugens*), were observed a few days prior to the survey in Proctor Valley. The entire alignment was walked twice, with each pass focused on a different side of the alignment corridor. Plant species recognized as sensitive by the California Native Plant Society (CNPS), U.S. Fish and Wildlife Service (USFWS), CDFG and MSCP, were mapped onto a 400-scale digital orthographic quarter quad (DOQQ) vegetation map of the entire alignment. All plant species observed within the alignment were recorded; a species list is included as *Appendix A*.

2.5 Survey Limitations

A wildlife study of the project corridor was not conducted, including any species-specific surveys. Therefore, information for wildlife occurrences (*i.e.*, during all seasons) in the project corridor is limited. The rare plant survey was conducted late in the 2000 spring season and certain species would have been difficult to detect. Of the identified potentially occurring rare plants, Palmer's grappling hook (*Harpagonella palmeri*) and Orcutt's bird's-beak (*Cordylanthus orcuttii*) were the only plants which would have not been easily detectable at the time of the survey. However, it can be presumed that if a large populations of either species were present within the alignment, they would have been observed.

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Salt Creek Interceptor and Wolf Canyon Trunk Sewer Project

3.0 PROJECT DESCRIPTION

3.1 Project Location

The Salt Creek and Wolf Canyon sewer would extend from immediately west of I-5, eastward parallel to the Otay River Valley, and then extend northward to Otay Lakes Road along Salt Creek (*Figures 1 and 2*). The alignment area is primarily within the City of Chula Vista but also contains some areas within the City of San Diego.

The staff recommended alignment alternative begins under Main Street west of I-5, and continues primarily within Main Street and Otay Valley Road. Where Main Street turns south, the alignment continues east and follows an existing dirt road through a quarry and cattle pastures to Salt Creek. At Salt Creek it follows a dirt road north until it reaches a San Diego Gas and Electric (SDG&E) easement. At this point, a sewer lateral will connect the Olympic Training Center, with the Salt Creek and Wolf Canyon Sewer (located approximately 2,000 feet to the northeast of the main line). From this point, the remainder of the alignment will be determined by the City of Chula Vista City Council based on two potential options: Policy Option 1 and Policy Option 2. Policy Option 1 crosses Salt Creek approximately 500 feet north of the San Diego Gas and Electric (SDG&E) easement and then runs within natural vegetation on the west side of the creek before it connects with built and to-be-built portions of the sewer north of the Village 11 project boundary, eventually ending at Otay Lakes Road. Policy Option 1 would require the construction of two lateral sewer lines to connect with the adjacent Village 11 development west of Salt Creek. Policy Option 2 would cross Salt Creek parallel to the existing SDG&E easement and extend further west than Policy Option 1, into the Village 11 development.

Project engineers were consulted in order to determine the limits of disturbance for the recommended alignment alternative, policy option alignments, and lateral alignments. A 40-foot wide study area, centered on the alignments, was chosen so as to include all potential direct, indirect, and temporary impacts of the proposed project. In addition, possible construction staging areas were designated for all portions of the alignment. Although the precise staging limits have yet to be determined, all possible staging areas were studied in order to facilitate avoidance of jurisdictional waters and other sensitive and/or regulated biological resources.

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4.0 RESULTS

4.1 Vegetation Community Descriptions

Upland vegetation communities identified in the proposed project construction corridor and staging areas include: annual (non-native) grassland, agriculture, broom baccharis scrub, disturbed broom baccharis scrub, coastal sage scrub, disturbed coastal sage scrub, southern cactus scrub, and disturbed habitat. Wetland habitats mapped include: mixed riparian scrub, cismontane alkali marsh, cismontane alkali marsh/freshwater marsh, mule fat scrub, tamarisk scrub, and disturbed wetland. A developed land category was mapped in urbanized areas. Below is a description of the onsite characteristics of each of these communities.

4.1.1 Broom Baccharis Scrub/Disturbed Broom Baccharis Scrub

Broom baccharis scrub is not recognized as a distinct plant community by Holland (1986). Nonetheless, it is a distinct vegetational association observed in southern California that is dominated by broom baccharis (*Baccharis sarothroides*), usually with a few scattered individuals of other native shrub species. It frequently is a successional community that occurs in more mesic sites and along drainages where coastal sage scrub or chaparral has been eliminated by perturbation. As such, broom baccharis scrub typically is considered a subcategory of coastal sage scrub by the resource agencies because its general plant architecture and density are similar enough to sage scrub to support many coastal sage scrub animal species, including the California gnatcatcher (*Poliophtila californica*).

Within the proposed alignment, broom baccharis scrub is dominated by broom baccharis. Other species found in this community include coastal goldenbush (*Isocoma menziesii*), California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), and common sow-thistle (*Sonchus oleraceus*).

Disturbed broom baccharis scrub differs from the community described above in the presence of certain non-native species such as black mustard (*Brassica nigra*), wild fennel (*Foeniculum vulgare*), filaree (*Erodium* spp.), and annual non-native grasses (*Bromus* spp. and *Avena* spp.). This community may also contain areas of bare soil where mechanical disturbance has disrupted the soil.

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4.1.2 Coastal Sage Scrub/Disturbed Coastal Sage Scrub

Coastal sage scrub is a native plant community composed of a variety of soft, low, aromatic shrubs, characteristically dominated by drought-deciduous species such as California sagebrush, California buckwheat and sages (*Salvia* spp.), with scattered evergreen shrubs, including lemonadeberry (*Rhus integrifolia*), laurel sumac (*Malosma laurina*), and toyon (*Heteromeles arbutifolia*). It typically develops on south-facing slopes and other xeric situations.

Coastal sage scrub on the project site is typified by the presence of California sagebrush, California buckwheat, broom baccharis, and black sage (*Salvia mellifera*). Other native species which are present include white sage (*Salvia apiana*), coastal goldenbush, and scattered cacti (*Opuntia prolifera* and *Ferocactus viridescens*).

Disturbed coastal sage scrub contains similar species as described above, but also contains a non-native component consisting of annual grasses and forbs. This community may also contain areas where soil disturbance has occurred and plant growth has thus been restricted.

Coastal sage scrub is recognized as a sensitive plant community by local, state, and federal resource agencies. It supports a rich diversity of sensitive plants and animals, and it is estimated that it has been reduced by 75-80% of its historical coverage throughout southern California. It is the focus of the current State of California Natural Communities Conservation Program (NCCP).

4.1.3 Southern Cactus Scrub

Southern cactus scrub is a vegetation community dominated by succulent plant species. Typical species in southern cactus scrub would include prickly-pear cactus (*Opuntia littoralis*), coast cholla (*Opuntia prolifera*), California sagebrush, California buckwheat, jojoba (*Simmondsia chinensis*), and black sage. It is distinct from the much more restricted maritime succulent scrub by the lack of certain species that occur near the coast. However, in the Otay Ranch area, in terms of assessment of impacts and mitigation, this habitat is treated as maritime succulent scrub.

Within the project site, southern cactus scrub contains the following species: coast cholla, San Diego barrel cactus (*Ferocactus viridescens*), California sagebrush, California buckwheat, and white sage.

Biological Resources Technical Report

Salt Creek Interceptor and Wolf Canyon Trunk Sewer Project

4.1.4 Cismontane Alkali Marsh

Cismontane alkali marsh is a wetland community dominated by low, perennial, herbaceous plants adapted to places where standing water or saturated soils are present for a considerable portion of the year. High evaporation and low input of fresh water render these marshes somewhat salty, especially during the summer. Plant species composition tends to favor halophytes such as San Diego marsh elder (*Iva hayesiana*), southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*), native rye grasses (*Leymus* spp.) and certain sedges (*Cyperus* spp.) over the typical cattail-bulrush mix of freshwater marsh.

Cismontane alkali marsh within the alignment contains few shrubs and mainly consists of a mixture of herbaceous species. Typical species include salt grass (*Distichlis spicata*), annual rabbit's-foot grass (*Polypogon monspeliensis*), sow-thistle (*Sonchus asper*), tamarisk (*Tamarix* sp.), and mule fat (*Baccharis salicifolia*). Other common flora found in these areas include perennial ryegrass (*Lolium perenne*), coastal goldenbush, and curly dock (*Rumex crispus*).

Cismontane alkali marsh is considered a wetland community and as such is under the jurisdiction of the CDFG, pursuant to Section 1601-1603 of the California Fish and Game Code, and the ACOE, pursuant to Section 404 of the Clean Water Act.

4.1.5 Cismontane Alkali Marsh/Freshwater Marsh

A single area was mapped as cismontane alkali marsh/freshwater marsh because of the presence of indicators of both vegetation communities. This area contained herbaceous species typically found in cismontane alkali marsh, along with a predominance of cattail (*Typha* sp.).

Cismontane alkali marsh/freshwater marsh is considered a wetland community and as such is under the jurisdiction of the CDFG, pursuant to Section 1601-1603 of the California Fish and Game Code, and the ACOE, pursuant to Section 404 of the Clean Water Act.

4.1.6 Mule Fat Scrub

Mule fat scrub is a tall, depauperate riparian community typically dominated by mule fat which develops along intermittent stream channels. This vegetation type can withstand

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intermittent flooding and frequently occurs as an understory between patches of sycamore (*Platanus racemosa*) stands. Common species, other than mule fat, include arroyo willow (*Salix lasiolepis*), narrow-leaved willow (*Salix exigua*), stinging nettle (*Urtica dioica*), and sedge (*Carex barbarae*) (Holland 1986).

Mule fat scrub was mapped in a single area along Salt Creek. This area contains a monotypic stand of mule fat with no visible understory.

Mule fat scrub is considered a wetland community and as such is under the jurisdiction of the CDFG, pursuant to Section 1601-1603 of the California Fish and Game Code, and the ACOE, pursuant to Section 404 of the Clean Water Act.

4.1.7 Mixed Riparian Scrub

Mixed riparian scrub is not a Holland vegetation type. However, it is used in this report to describe areas in the Otay River which are composed of a mosaic of tamarisk-dominated, mule fat-dominated and disturbed wetland-dominated areas. These species vary in abundance throughout the project areas where they occur. Other than tamarisk and mule fat, typical species present in this habitat include southwestern spiny rush, San Diego marsh-elder, slender aster (*Aster subulatus*), annual rabbit's-foot grass, broom baccharis, and curly dock. It appears that this mosaic of wetland communities has developed from mechanized alterations of topography caused by historical human disturbances.

Mixed riparian scrub would be considered a wetland community and as such is under the jurisdiction of the CDFG, pursuant to Section 1601-1603 of the California Fish and Game Code, and the ACOE, pursuant the Section 404 of the Clean Water Act.

4.1.8 Disturbed Wetland

Disturbed wetland commonly refers to areas which support largely non-native herbaceous hydrophytic vegetation showing evidence of current or past human disturbance.

Disturbed wetland within the alignment contains a mix of herbaceous species including curly dock, prickly lettuce (*Lactuca serriola*), mariposa rush (*Juncus dubius*), western ragweed (*Ambrosia psilostachya*), sow-thistle, California everlasting (*Gnaphalium californicum*) and annual rabbit's-foot grass.

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Disturbed wetland is considered a wetland community and as such is under the jurisdiction of the CDFG, pursuant to Section 1601-1603 of the California Fish and Game Code, and the ACOE, pursuant the Section 404 of the Clean Water Act.

4.1.9 Tamarisk Scrub

Tamarisk scrub was mapped in the northern portion of Salt Creek where the overstory is dominated by tamarisk. The understory vegetation remained consistent with surrounding areas, usually cismontane alkali marsh.

Tamarisk scrub is considered a wetland community and as such is under the jurisdiction of the California Department of Fish and Game, pursuant to Section 1601-1603 of the California Fish and Game Code, and the U.S. Army Corps of Engineers, pursuant the Section 404 of the Clean Water Act.

4.1.10 Annual (Non-native) Grassland

Where the native habitat has been disturbed frequently or intensively by grazing, fire, agriculture, or other activities, the native community usually is incapable of recovering. These areas are characterized by weedy, introduced annuals, primarily grasses, including slender wild oat (*Avena barbata*), bromes (*Bromus diandrus*, *B. madritensis*, *B. hordeaceus*), and forbs such as mustards (*Brassica* and *Sisymbrium* spp.), filaree (*Erodium* spp.), and Russian-thistle (*Salsola tragus*).

Annual grassland was mapped in areas which contain a predominance of non-native annual grasses such as slender wild oat and bromes. Other species present in these areas include doveweed (*Eremocarpus setigerus*), filaree, and coastal goldenbush.

4.1.11 Agriculture

Agriculture is a developed land use type which generally refers to areas which are actively being used for farming or ranching purposes, including crop fields, grazing fields, orchards, nurseries, etc.

Agriculture was mapped in areas which were in current agricultural use and did not support a predominance of native plant species. These areas are used as grazing land for cattle as well

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as crop farming and mainly support annual non-native grasses and some weeds such as doveweed, black mustard (*Brassica nigra*), field mustard (*Brassica rapa*), and filaree. Because of the grazing, vegetation within this community only grows a few inches above the ground.

4.1.12 Disturbed Habitat

Disturbed habitat generally refers to areas which may have supported native plant populations in the past but have been disturbed by mechanical means such that with little vegetative cover remains.

Disturbed habitat was mapped in the project area where frequent mechanical disturbance has prevented the growth of natural vegetation. These areas include dirt roads as well as areas of bare soil which appear to be frequently disturbed.

4.1.13 Developed Land

Developed land was mapped in areas which have been urbanized, including paved roads, buildings, parking lots, and asphalt/gravel roads.

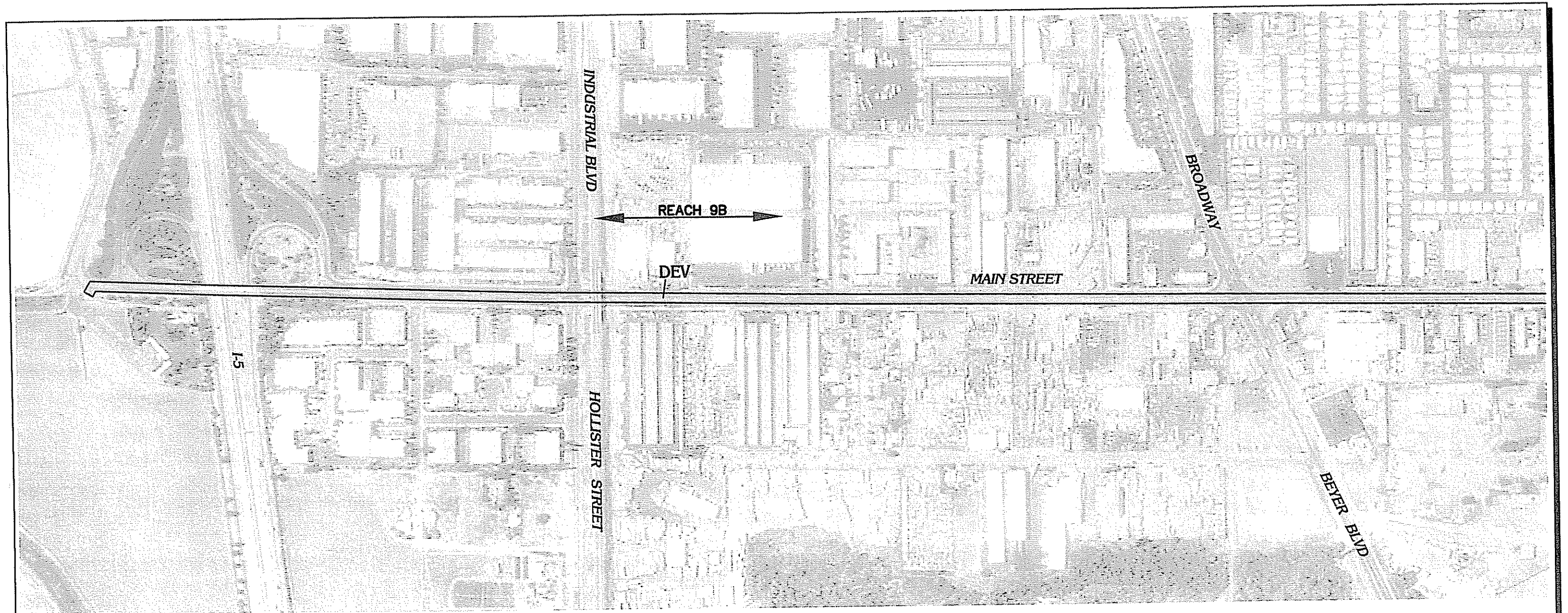
4.2 Floral Diversity

A total of 96 species of vascular plants - 51 native (53 percent) and 45 non-native (47 percent) - was recorded from the site. The list of plant species detected is provided as *Appendix A*. Surveys were conducted during an appropriate time of year (*i.e.*, late spring) so it is assumed that a majority of the plant species occurring in the project area were detected.

4.3 Distribution of Vegetation Communities

Table 1 shows the acreage for each of the vegetation communities and land use types listed above. The numbers below represent the entire area of potential effect; *i.e.*, the 40-foot-wide study area for the combined recommended alternative alignment, sewer laterals and both policy options.

Figures 3 through 13 show the biological resources, including waters of the U.S., along the entire alignment. The majority of the developed land occurs in the western-half of the alignment where the sewer would be placed under a paved road. The upland habitats mostly



Vegetation Types/Landcovers:

AGL	Annual Grassland
AGR	Agriculture
BBS	Broom Baccharis Scrub
CAM	Cismontane Alkali Marsh
CSS	Coastal Sage Scrub
DEV	Developed
DH	Disturbed Habitat
EUC	Eucalyptus Woodland

FWM	Freshwater Marsh
MFS	Mule Fat Scrub
MRS	Mixed Riparian Scrub
OC	Open Channel
SCS	Southern Cactus Scrub
SWS	Southern Willow Scrub
TS	Tamarisk Scrub

NOTE: A lower case 'd' in front of a vegetation type designator indicates that it is disturbed.

Jurisdictional Waters/Wetlands:

CAM - Cismontane Alkali Marsh
 FWM - Freshwater Marsh
 MFS - Mule Fat Scrub
 MRS - Mixed Riparian Scrub
 OC - Open Channel
 SWS - Southern Willow Scrub
 TS - Tamarisk Scrub

Waters of the U.S.

NOTE: Measurements in feet indicate channel width.

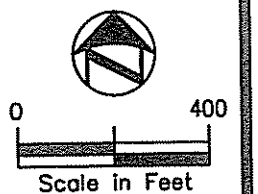


Potential Staging Area

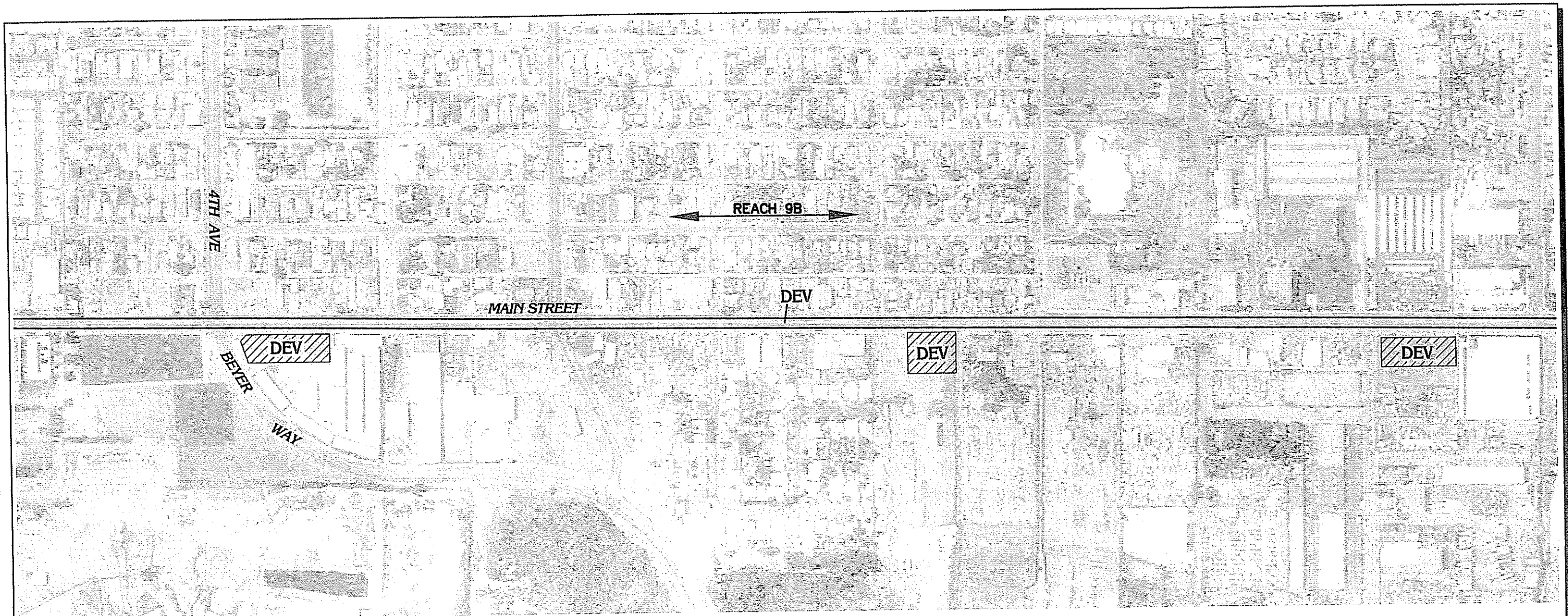


Staff Recommended Alignment Alternative

Data Station



BASE AERIAL SOURCE: San Diego Aerial Image Database, 1994-95



Vegetation Types/Landcovers:

AGL	Annual Grassland
AGR	Agriculture
BBS	Broom Baccharis Scrub
CAM	Cismontane Alkali Marsh
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DEV	Developed
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TS	Tamarisk Scrub

NOTE: A lower case 'd' in front of a vegetation type designator indicates that it is disturbed.

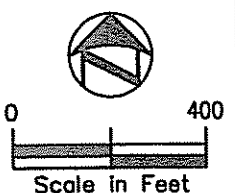
Jurisdictional Waters/Wetlands:

CAM - Cismontane Alkali Marsh
 FWM - Freshwater Marsh
 MFS - Mule Fat Scrub
 MRS - Mixed Riparian Scrub
 OC - Open Channel
 SWS - Southern Willow Scrub
 TS - Tamarisk Scrub

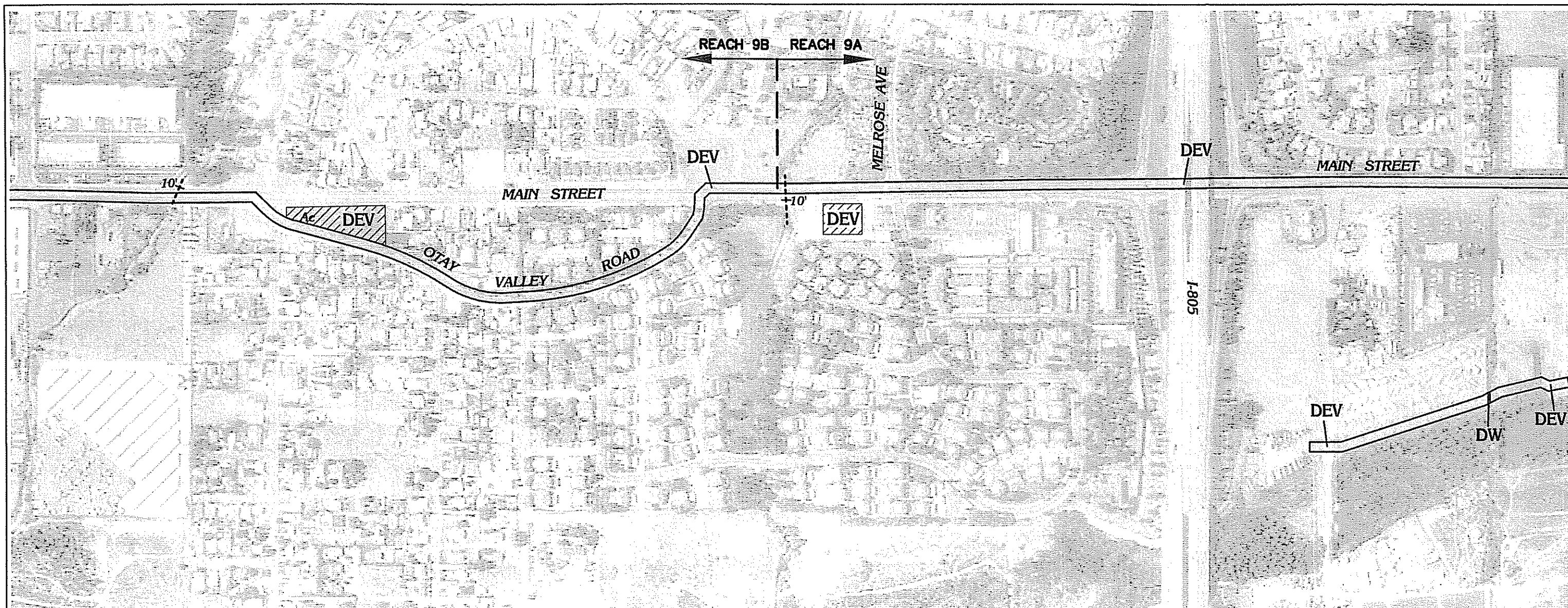
Waters of the U.S.

NOTE: Measurements in feet indicate channel width.

- Potential Staging Area
- Staff Recommended Alignment Alternative
- Data Station



BASE AERIAL SOURCE: San Diego Aerial Image Database, 1994-95



Vegetation Types/Landcovers:

AGL	Annual Grassland
AGR	Agriculture
BBS	Broom Baccharis Scrub
CAM	Cismontane Alkali Marsh
CSS	Coastal Sage Scrub
DEV	Developed
DH	Disturbed Habitat
DW	Disturbed Wetland

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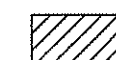
NOTE: A lower case 'd' in front of a vegetation type designator indicates that it is disturbed.

Jurisdictional Waters/Wetlands:

CAM - Cismontane Alkali Marsh
 DW - Disturbed Wetland
 FWM - Freshwater Marsh
 MFS - Mule Fat Scrub
 MRS - Mixed Riparian Scrub
 OC - Open Channel
 SWS - Southern Willow Scrub
 TS - Tamarisk Scrub

Waters of the U.S.

NOTE: Measurements in feet indicate channel width.



Potential Staging Area

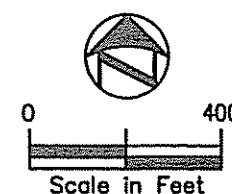


Staff Recommended Alignment Alternative

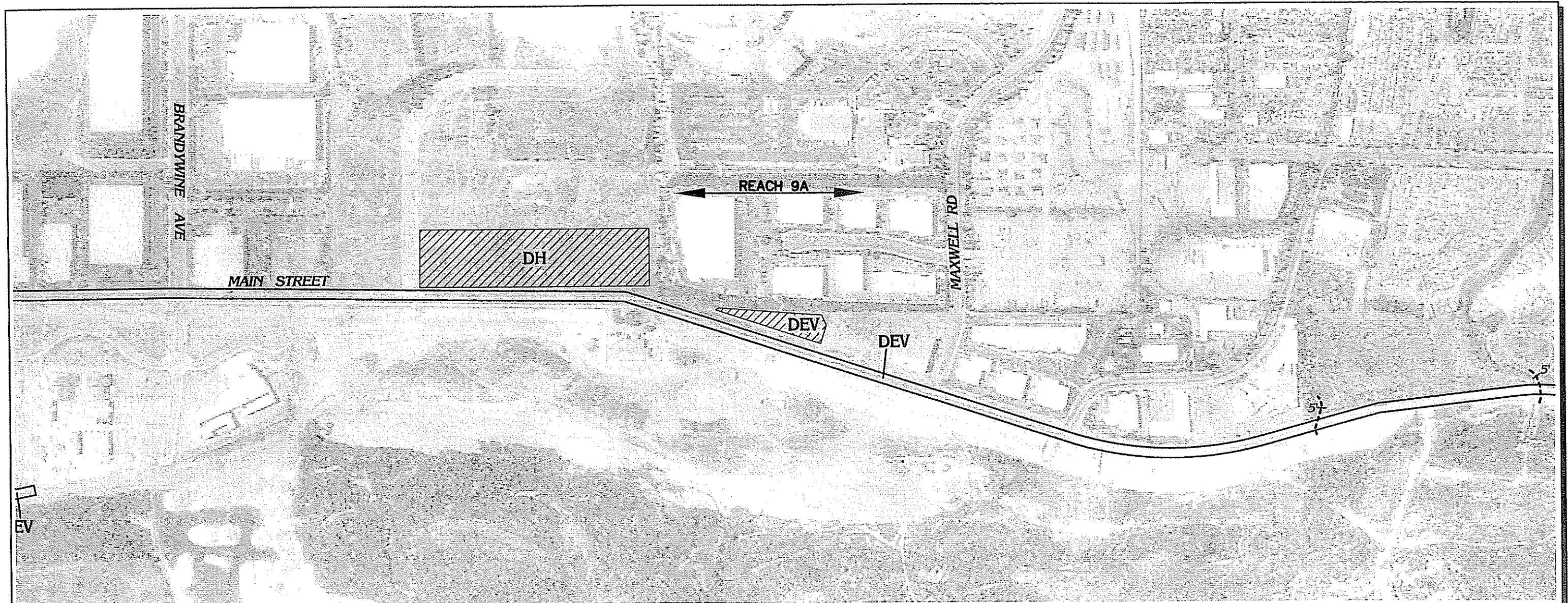
Data Station

Sensitive Plant Species:

Ac *Adolphia californica*



BASE AERIAL SOURCE: San Diego Aerial Image Database, 1994-95



Vegetation Types/Landcovers:

AGL	Annual Grassland
AGR	Agriculture
BBS	Broom Baccharis Scrub
CAM	Cismontane Alkali Marsh
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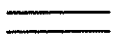

NOTE: A lower case 'd' in front of a vegetation type designator indicates that it is disturbed.

Jurisdictional Waters/Wetlands:

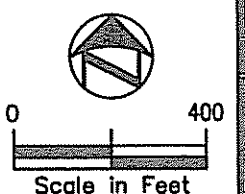
CAM - Cismontane Alkali Marsh
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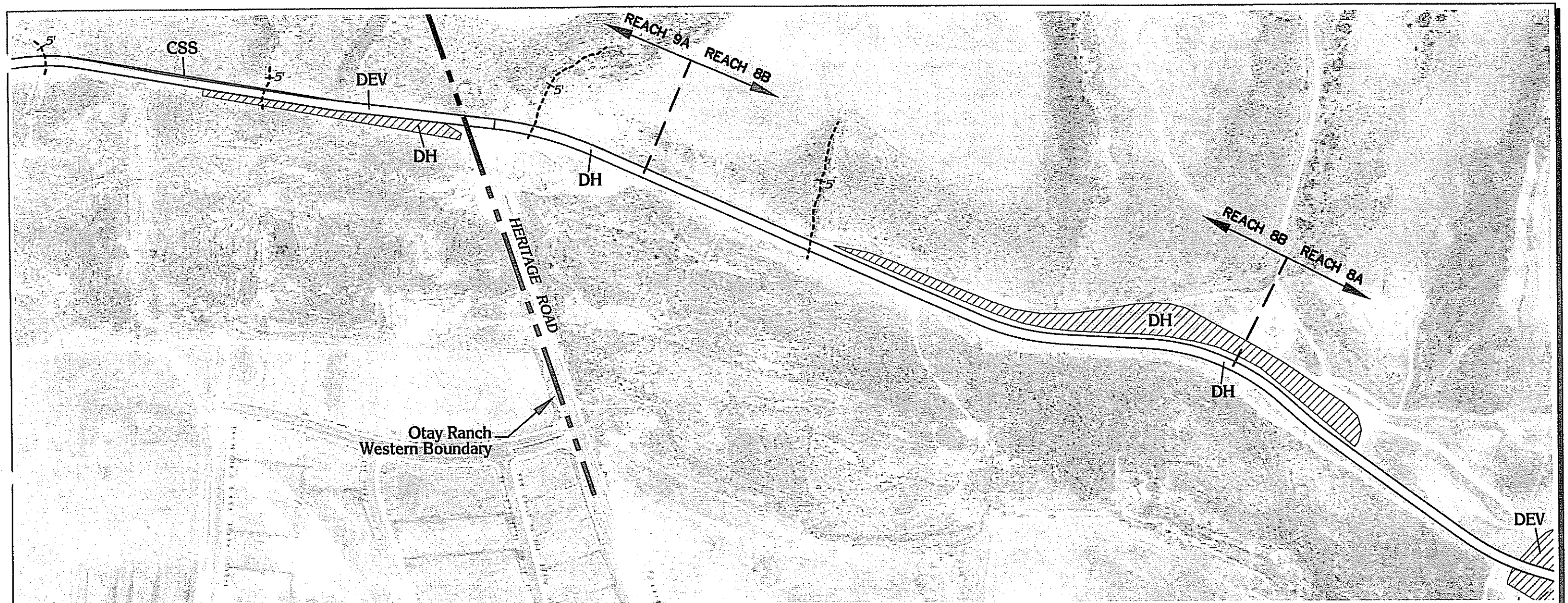
Waters of the U.S.

NOTE: Measurements in feet indicate channel width.

-  Potential Staging Area
-  Staff Recommended Alignment Alternative
-  Data Station

BASE AERIAL SOURCE: San Diego Aerial Image Database, 1994-95





Vegetation Types/Landcovers:

AGL	Annual Grassland
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BBS	Broom Baccharis Scrub
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Jurisdictional Waters/Wetlands:

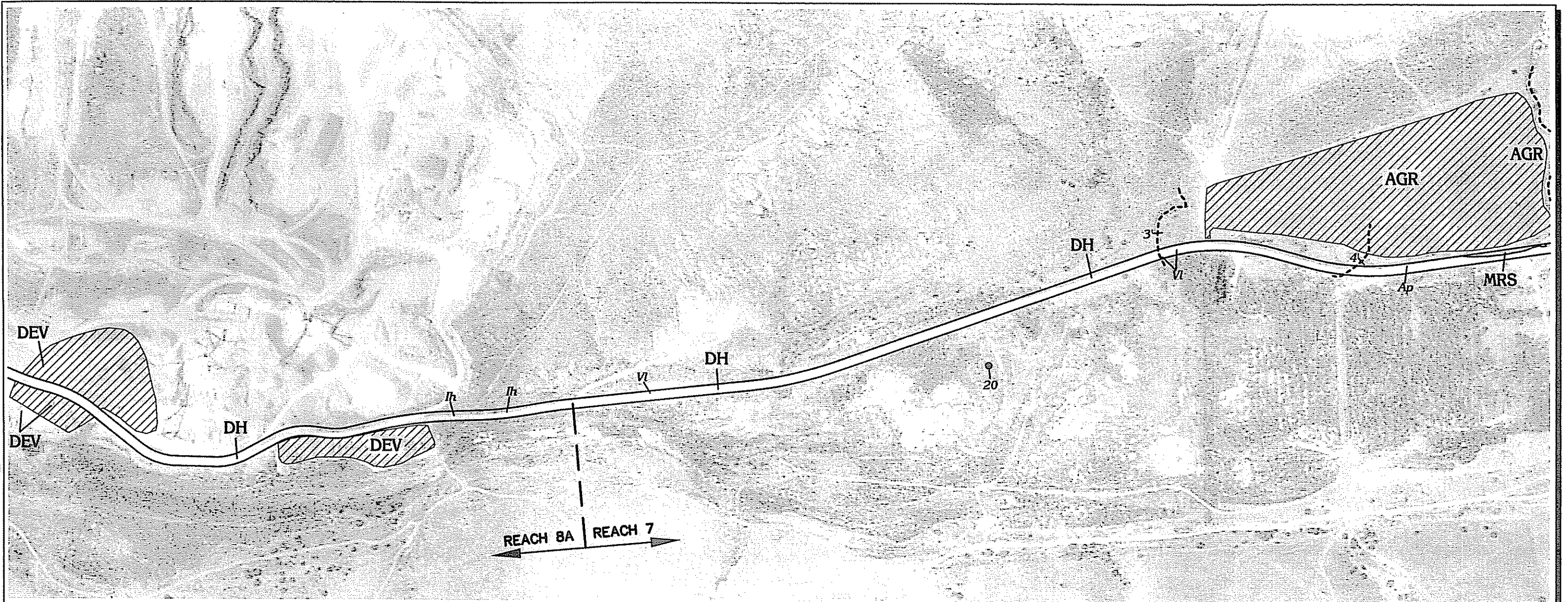
CAM - Cismontane Alkali Marsh
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Waters of the U.S.

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- Potential Staging Area
- Staff Recommended Alignment Alternative
- Data Station

BASE AERIAL SOURCE: San Diego Aerial Image Database, 1994-95



Vegetation Types/Landcovers:

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--- Waters of the U.S.

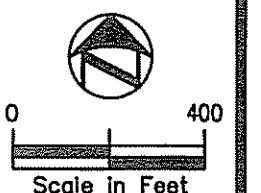
NOTE: Measurements in feet indicate channel width.

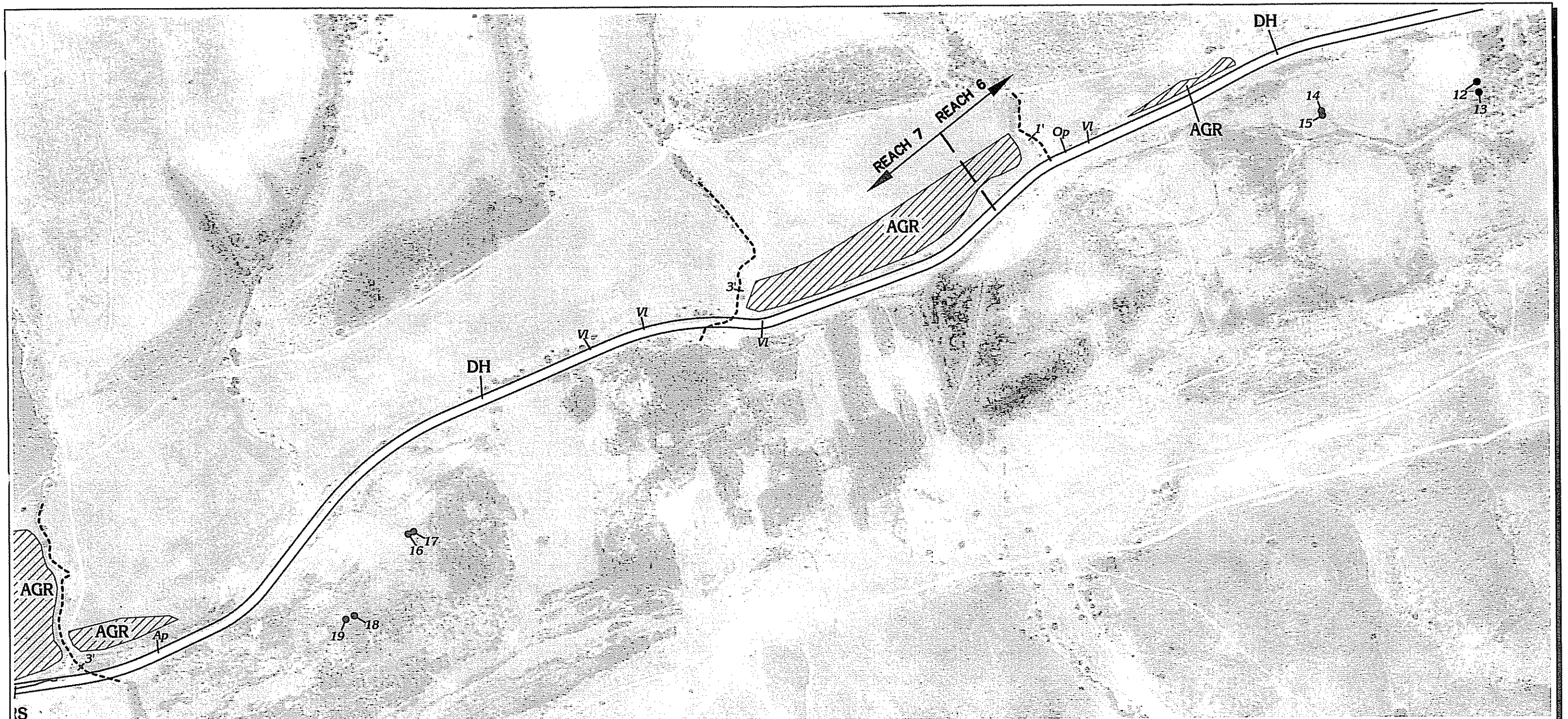
- Potential Staging Area
- Staff Recommended Alignment Alternative
- Data Station

Sensitive Plant Species:

Ap *Atriplex pacifica*
lh *Iva hayesiana*
VI *Viguiera laciniata*

BASE AERIAL SOURCE: San Diego Aerial Image Database, 1994-95





Vegetation Types/Landcovers:

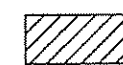
- AGR** Agriculture
- CSS** Coastal Sage Scrub
- DH** Disturbed Habitat
- MRS** Mixed Riparian Scrub

Jurisdictional Waters/Wetlands:

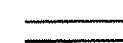
MRS - Mixed Riparian Scrub

Waters of the U.S.

NOTE: Measurements in feet indicate channel width.



Potential Staging Area



Staff Recommended Alignment Alternative

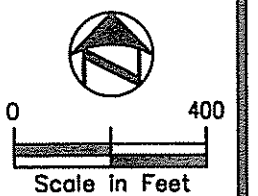
Data Station

Sensitive Plant Species:

- Ap** *Atriplex pacifica*
- Op** *Opuntia parryi* var. *serpentina*
- Vl** *Viguiera laciniata*

BASE AERIAL SOURCE: San Diego Aerial Image Database, 1994-95

NOTE: A lower case 'd' in front of a vegetation type designator indicates that it is disturbed.



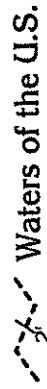
Vegetation Types/Landcovers:

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Jurisdictional Waters/Wetlands:

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 FWM - Freshwater Marsh
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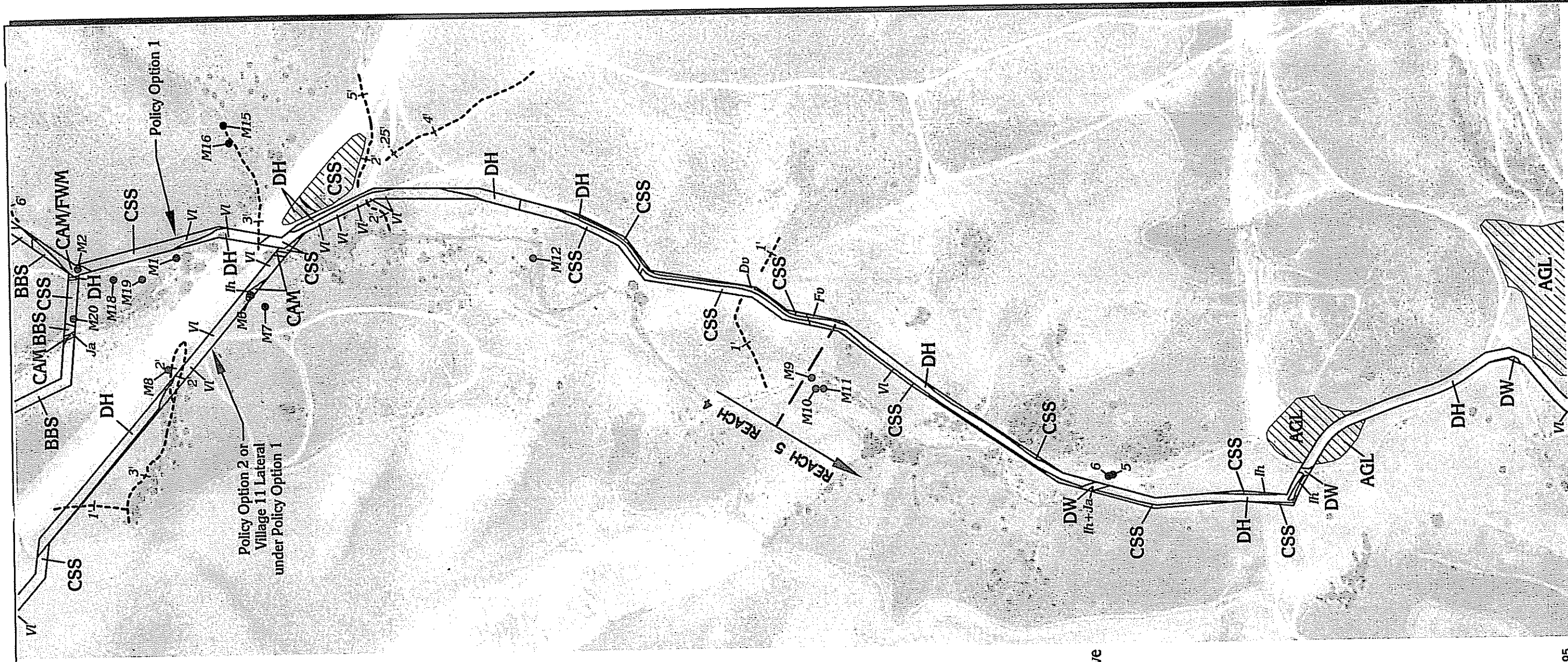
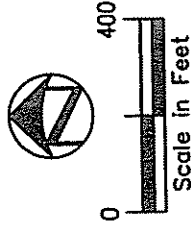


NOTE: Measurements in feet indicate channel width.



Sensitive Plant Species:

Dv *Dudleya variegata*
 Fv *Ferocactus viridescens*
 Ih *Iva hayesiana*
 Ja *Juncus acutus*
 Vl *Viguiera laetiflora*



BASE AERIAL SOURCE: San Diego Aerial Image Database, 1994-95

Vegetation Types/Landcovers:

AGL	Annual Grassland
AGR	Agriculture
BBS	Broom Baccharis Scrub
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CSS	Coastal Sage Scrub
DEV	Developed
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Waters of the U.S.

NOTE: Measurements in feet indicate channel width.

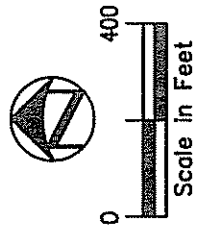
Potential Staging Area

Staff Recommended Alignment Alternative

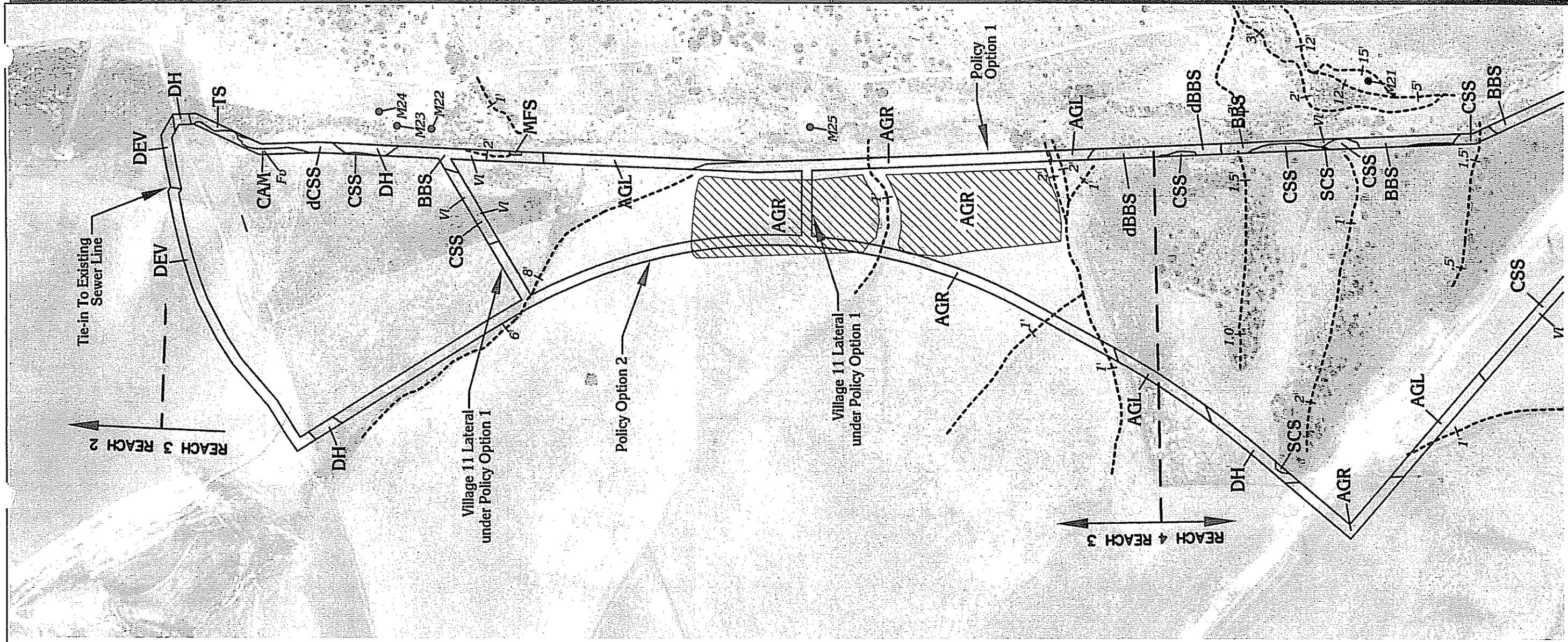
Data Station

Sensitive Plant Species:

Fv *Ferocactus viridescens*
 Vl *Viguiera lachniata*



BASE AERIAL SOURCE: San Diego Aerial Image Database, 1994-95



Salt Creek Sewer - Biological Resources Report & Impact Analysis
 Biological Resources Map - Sheet 10

Vegetation Types/Landcovers:

AGL	Annual Grassland
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BBS	Broom Baccharis Scrub
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CAM	Cismontane Alkali Marsh
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SWS	Southern Willow Scrub
TS	Tamarisk Scrub

Waters of the U.S.

NOTE: Measurements in feet indicate channel width.

Potential Staging Area

Staff Recommended Alignment Alternative

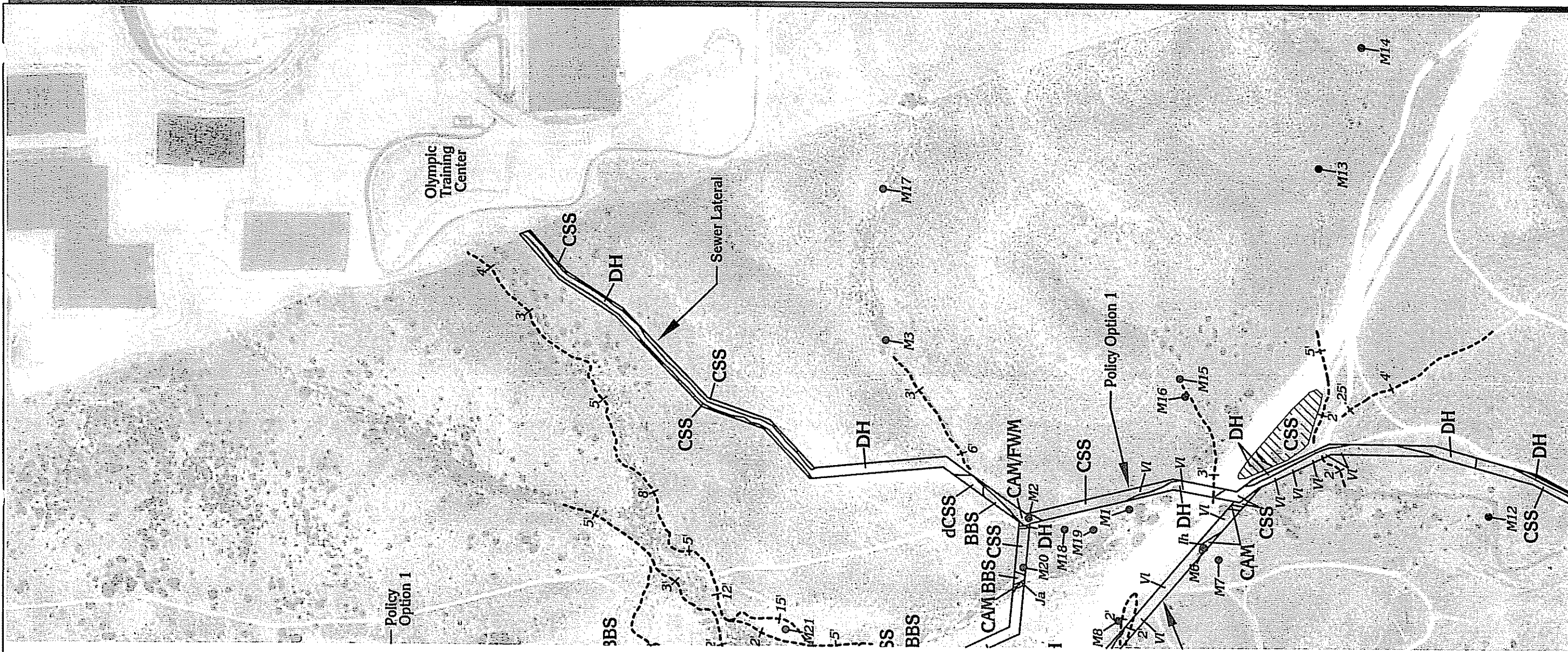
1- Data Station

Sensitive Plant Species:

Ih	<i>Iva hayesiana</i>
Ja	<i>Juncus acutus</i>
Vi	<i>Viguiera lachniata</i>



0 400
Scale in Feet



BASE AERIAL SOURCE: San Diego Aerial Image Database, 1994-95

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occur in the eastern portion of the alignment where the sewer could not be placed on a dirt or paved road. The wetland habitats occur at a variety of locations where the alignment crosses Salt Creek and/or the margins of the Otay River.

TABLE 1
VEGETATION COMMUNITY ACREAGES
ALL ALTERNATIVE ALIGNMENTS AND LATERALS

Vegetation Type	Acres
<i>Total Natural Upland Communities</i>	<i>9.76</i>
Annual Grassland	1.60
Broom Baccharis Scrub	1.79
Disturbed Broom Baccharis Scrub	0.43
Coastal Sage Scrub	5.57
Disturbed Coastal Sage Scrub	0.34
Southern Cactus Scrub	0.03
<i>Total Wetland Communities</i>	<i>0.72</i>
Cismontane Alkali Marsh	0.17
Cismontane Alkali Marsh/Freshwater Marsh	0.14
Disturbed Wetland	0.20
Mule Fat Scrub	0.01
Mixed Riparian Scrub	0.10
Tamarisk Scrub	0.10
<i>Total Non-natural Upland Communities</i>	<i>56.83</i>
Agriculture	5.18
Disturbed Habitat	24.92
Developed Land	26.73
<i>TOTAL ALIGNMENT</i>	<i>67.31</i>

In addition to the alignment study area, several potential staging areas were surveyed and generally contain agriculture, annual grassland, disturbed habitat and developed areas. The staging areas are depicted in the biological resource maps (*Figures 3-13*). *Table 2* indicates the vegetation communities which occur within the potential staging areas.

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TABLE 2
VEGETATION COMMUNITY ACREAGES POTENTIAL STAGING AREAS

Vegetation Type	Acres
Agriculture	49.52
Annual Grassland	14.05
Coastal Sage Scrub	0.80
Developed Land	9.90
Disturbed Habitat	10.04
TOTAL	84.31

4.4 Sensitive Plant Species

4.4.1 Results of Spring 2000 Survey

A rare plant survey was conducted in late May of 2000 and resulted in the detection and mapping of nine rare plants (see *Figures 3-13*). Species of relatively low sensitivity found in the eastern portion of the sewer alignment area include San Diego sunflower (*Viguiera laciniata*), southwestern spiny rush (*Juncus acutus* ssp. *leopoldii*), San Diego barrel cactus (*Ferocactus viridescens*), and San Diego marsh-elder (*Iva hayesiana*). Species considered to be of higher sensitivity were identified in relatively few areas, and include snake cholla (*Opuntia parryi* var. *serpentina*), South Coast saltscale (*Atriplex pacifica*), and variegated dudleya (*Dudleya variegata*). With the exception of an occurrence of California adolphia (*Adolphia californica*) recorded within a small potential staging area between Main Street and Otay Valley Road, west of I-805, no other sensitive species were recorded west of the existing quarry. *Table 3* quantifies the number of occurrences of each species found within the study area.

The survey verified that the federally-listed threatened and state-listed endangered Otay tarplant does not occur within the proposed project corridor.

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TABLE 3. SUMMARY OF RARE PLANT LOCATIONS

SPECIES	# of Locations
<i>Adolphia californica</i>	1 (1 staging area)*
<i>Atriplex pacifica</i>	1
<i>Dudleya variegata</i>	1
<i>Ferocactus viridescens</i>	2
<i>Iva hayesiana</i>	9 (1 staging area)*
<i>Juncus acutus</i> ssp. <i>leopoldii</i>	2
<i>Opuntia parryi</i> var. <i>serpentina</i>	1
<i>Viguiera laciniata</i>	33 (1 staging area)*

* First number represents total number of locations found within the study area and in the possible construction staging areas. Numbers in parentheses are a subset of the total number above.

4.4.2 Sensitive Plant Species with Potential to Occur

The following sensitive plants include those with the potential to occur within the proposed alignment area. To compile this list, databases were reviewed from biological surveys recorded for the MSCP, Otay Ranch General Development Plan (GDP) and New Millennium projects as well as the California Native Diversity Database (CNDDB). Biologists with local knowledge were also consulted to accumulate a comprehensive list of potential species. Table 4 contains a list of the species, their sensitivity status, and a brief statement concerning the species's potential to occur, typical habitat and other project-related comments. A more thorough discussion of those species which occur in the project corridor and those which are listed or are high-profile species, follows the table and includes information on regulatory status, natural history, distribution and the species' potential to occur.

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TABLE 4 - SENSITIVE PLANTS HABITAT, POTENTIAL TO OCCUR AND COMMENTS

SPECIES	SENSITIVITY STATUS/ RANKING	POTENTIAL TO OCCUR	HABITAT	COMMENTS
<i>Ambrosia pumila</i> - San Diego Ambrosia	Federal - Proposed Endangered State - None CNPS - List 1B, 3-2-2	Low	valleys and disturbed areas < 150 m	Identifiable at time of surveys, but not detected
<i>Atriplex pacifica</i> - South Coast saltscale	Federal - None State - None CNPS - List 1B, 3-2-2	Found onsite	exposed open soils, often clay	Detected during Spring 2000 surveys
<i>Cordylanthus orcuttianus</i> - Orcutt's bird's-beak	Federal - None State - None CNPS - List 2, 3-3-1	Moderate	variety of upland habitats and wetland edges	Large population would have been identifiable at time of surveys, but not detected
<i>Dudleya variegata</i> - variegated dudleya	Federal - None State - None CNPS - List 4, 1-2-2	Found onsite	clay soils on coastal mesas	Detected during Spring 2000 surveys
<i>Ferocactus viridescens</i> - San Diego barrel cactus	Federal - None State - None CNPS - List 2, 1-3-1	Found onsite	dry slopes in coastal sage scrub and chaparral	Detected during Spring 2000 surveys
<i>Fremontodendron mexicanum</i> - Mexican flannelbush	Federal - None State - Rare CNPS - List 1B, 3-2-2	Low	dry, shaded canyons in chaparral	Identifiable at time of surveys, but not detected
<i>Deinaudra palmeri</i> var. <i>palmeri</i> - Palmer's grappling hook	Federal - None State - None CNPS - List 2, 1-2-1	Moderate	clay slopes and burns below 1000 m	Large population would have been identifiable at time of surveys, but not detected
<i>Hemizonia conjugens</i> - Otay tarplant	Federal - Threatened State - Endangered CNPS - List 1B, 3-3-2	Moderate	clay soils and swales	Identifiable at time of surveys, but not detected
<i>Iva hayesiana</i> - San Diego marsh-elder	Federal - None State - None CNPS - List 2, 2-2-1	Found onsite	moist or alkaline places along intermittent streams	Detected during Spring 2000 surveys
<i>Juncus acutus</i> ssp. <i>leopoldii</i> - southwestern spiny rush	Federal - None State - None CNPS - List 4, 1-2-1	Found onsite	alkaline seeps and marshes	Detected during Spring 2000 surveys
<i>Opuntia parryi</i> var. <i>serpentina</i> - snake cholla	Federal - None State - None CNPS - List 1B, 3-3-2	Found onsite	sandy places and dry slopes in coastal sage scrub and mixed chaparral	Detected during Spring 2000 surveys
<i>Salvia munzii</i> - Munz's sage	Federal - None State - None CNPS - List 2, 2-2-1	Low	coastal sage scrub in the southern foothill and coastal region	Identifiable at time of surveys, but not detected

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SPECIES	SENSITIVITY STATUS/ RANKING	POTENTIAL TO OCCUR	HABITAT	COMMENTS
<i>Viguiera laciniata</i> - San Diego County viguiera	Federal - None State - None CNPS - List 2, 1-2-1	Found onsite	coastal sage scrub habitat below about 400 m	Detected during Spring 2000 surveys

Atriplex pacifica - South Coast saltscale

USFWS: None

CDFG: None

CNPS: List 1B; 3-2-2

South Coast saltscale is a small annual to biennial herb that occurs in eroded clay soils that are poorly drained. This herb has small gray foliage with somewhat reddish stems and may be confused with young individuals of Australian saltbush (*Atriplex semibaccata*). The species has been reported in small numbers throughout coastal southern and Baja California including more inland locations in Riverside county, and throughout the southern Channel Islands. South Coast saltscale can be found in two distinct habitats, in depressions such as vernal pools or road ruts, and on steep slopes within the colluvium of eroding slumps. In San Diego County species usually occurs in exposed, open habitats with dot-seed plantain (*Plantago erecta*), spineflower (*Chorizanthe* spp.), Russian-thistle, and other colonizers of open clay habitats. There are questions regarding the taxonomy of this species and whether it is conspecific with several other sensitive herbaceous *Atriplex* species (e.g. *Atriplex serrenana* var. *davidsonii* and *Atriplex coulterii*). Though the taxonomy of this species is unclear the conservation status of this complex of species is unlikely to be downgraded because of the scarcity of protected habitat for the related species.

One location of this species, consisting of a few individuals, was identified within and adjacent to the dirt road which travels along the north bank of the Otay River. From a regional perspective, the population mapped within the proposed alignment is small.

Dudleya variegata - variegated dudleya

USFWS: None

CDFG: None

CNPS: List 4, 1-2-2

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Variegated dudleya is an ephemeral herbaceous succulent that grows from a corm. The species typically occurs near the coast on level mesas with clay soils and is restricted to southern San Diego County and northwestern Baja California. According to the Skinner and Pavlik (1994), it occurs in sufficient numbers so that immediate threat of extinction or extirpation is unlikely. However, it is likely that this species is substantially more sensitive than indicated by its current status. The only protected sites for this species are the Naval Radio Receiving Facility tower in Imperial Beach and possibly some areas on Miramar Marine Air Station. Variegated dudleya is considered locally threatened because agricultural development on Otay Mesa has eliminated the plant from many of its former locations, and commercial development is planned for many of the remaining sites.

This species was identified on a low hilltop adjacent to the existing gravel road in the eastern portion of the project alignment.

Ferocactus viridescens - San Diego barrel cactus

USFWS: None

CDFG: None

CNPS: List 2, 1-3-1

San Diego barrel cactus is a low, dome-like, perennial cactus, limited in distribution to San Diego County and adjacent Baja California, Mexico. In San Diego County it occurs commonly on dry slopes in Diegan coastal sage scrub and chaparral communities. Although relatively widespread in the county, San Diego barrel cactus is continuing to decline in numbers as its habitats are reduced. San Diego barrel cactus is threatened primarily by urbanization, off-road vehicles, and commercial exploitation.

This species was mapped in a few locations in the eastern portions of the alignment.

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Harpagonella palmeri var. *palmeri* - Palmer's grappling hook

USFWS: None

CDFG: None

CNPS: List 2, 1-2-1

This widely-distributed, diminutive annual occurs in Los Angeles, Orange, Riverside, and San Diego counties, on San Clemente Island, in Arizona, Baja California, and Sonora, Mexico. This monotypic species generally occurs on clay slopes and burns below 1000 m (3,280 ft) elevation, and flowers from February to April (Munz 1974; Wiggins 1980; Beauchamp 1986). In San Diego County, this species is reported in Guajome Mesa, Rancho Santa Fe, Olivenhain, Poway Grade, Kearny Mesa, Emerald Hills, Mission Gorge, Otay, Dehesa, Rice Canyon, Table Mountain and Box Canyon (Beauchamp 1986). The plant is best detected early in the growing season before herbs have dried out and annual grasses obscure its presence.

This species was not detected during spring 2000 surveys, but may have been missed due to the small size of the plant and the relatively late timing of the survey in relation to this species' growing season. It can be presumed, however, that if a large population occurs within the alignment it would have been identified during the spring 2000 survey.

Deinaudra conjugens - Otay tarplant

USFWS: Threatened

CDFG: Endangered

CNPS: List 1B, 3-3-2

This late summer-blooming annual occurs only in southwestern San Diego County and a portion of northwestern Baja California, Mexico. Within San Diego County, Otay tarplant is found in scattered localities on clay soils and swales from immediately north of Sweetwater Reservoir south to the international border. It is apparently similarly uncommon in Mexico. The primary threat to this species appears to be development of its habitat. Several of the historical sites of the Otay tarplant along Telegraph Canyon and on Otay Mesa have been lost to development within the last five years.

This species was verified to be in bloom at the time of the spring 2000 survey at nearby reference locations (Village 2 of Otay Ranch and Proctor Valley). It was not detected within the alignment corridor.

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Iva hayesiana - San Diego marsh-elder

USFWS: None

CDFG: None

CNPS: List 2, 2-2-1

This low perennial shrub occurs in southwestern San Diego County and northern Baja California (Munz 1974; Skinner and Pavlik 1994). It grows in low-lying, moist or alkaline places along intermittent streams in coastal areas. Although it has a fairly restricted range in San Diego County, San Diego marsh-elder is apparently more widespread to the south, ranging into central Baja California (Wiggins 1980). In San Diego County, *I. hayesiana* is confined to several disjunct populations between San Marcos and Otay Mesa. San Diego marsh-elder often grows in association with southwestern spiny rush (*Juncus acutus* var. *leopoldii*) and other indicators of wetland habitat (Reed 1988). It is a dominant understory plant in disturbed floodplain situations such as that in the Otay River Valley. Its habitat in southwestern San Diego County is threatened by coastal development and channelization of local streams and rivers.

This species was mapped in several locations where the alignment crosses or is near a riparian area.

Juncus acutus ssp. *leopoldii*- southwestern spiny rush

USFWS: None

CDFG: None

CNPS: List 4, 1-2-1

This large (0.5-1.5 m), tufted, perennial rush, with stout, rigid stems, is encountered frequently in alkaline seeps and marshes or in areas adjacent to these. Southwestern spiny rush has a wide distribution from San Luis Obispo County south to Baja California and east to Imperial County and Arizona, although some doubt exists regarding the taxonomy of eastern populations. Although urbanization represents a serious threat to southwestern spiny rush (Skinner and Pavlik 1994), the abundance of this plant in many widely separated wetlands, together with the current application of protection for these habitats, indicates a rather low threat to this species.

This species was mapped at several drainage crossings.

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Opuntia parryi var. *serpentina* - snake cholla

USFWS: None

CDFG: None

CNPS: List 1B, 3-3-2:

Snake cholla is a prostrate or suberect, spring-blooming (April-May), perennial cactus. It is infrequent in sandy places and dry slopes in coastal sage scrub and mixed chaparral habitats below about 150 m. It is restricted to western San Diego County and adjacent northern Baja California, Mexico. In San Diego County it has been recorded from Balboa Park, Point Loma, Chollas Valley, Chula Vista, Jamacha, Telegraph Canyon, and Boundary Monument No. 258 (Beauchamp 1986).

A few individuals in a single location were mapped along the north slope of the existing dirt road which parallels the Otay River.

Viguiera laciniata - San Diego sunflower

USFWS: None

CDFG: None

CNPS: List 2, 1-2-1

San Diego sunflower is a moderate-sized (0.8-1.2 m), yellow-flowered, perennial shrub, that blooms from about January to July. It is restricted to coastal sage scrub habitat below about 400 m from San Diego County to northwestern Baja California, Mexico. In San Diego County, it is locally common south of Mission Valley; it ranges from the international border north to about Scripps Ranch, and extends east from the Pacific coast to Dulzura, Potrero, and Crest. Although many of the former sites of this plant have been lost to development, it is found in sufficient numbers and distributed widely enough that the potential for extinction or extirpation is low at this time.

A large number of these plants were mapped in a variety of locations in the eastern portions of the alignment.

4.5 Sensitive Animal Species

Although no general or focused surveys for animal species were conducted along the alignment, information regarding sensitive species locations and potential to occur was

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gathered from existing databases, an understanding of existing habitat and direct knowledge of the project vicinity. *Table 5* provides a list of sensitive animals observed in the vicinity of the project area during biological surveys recorded in the CNDDDB, MSCP, Otay Ranch GDP, and Village 11 projects as well as species which may occur within or near the proposed alignment area. Also included in *Table 5* are listed species known from the general vicinity, but unlikely to occur in the project corridor because of a lack of habitat (e.g., fairy shrimp).

**TABLE 5 - SENSITIVE ANIMALS
HABITAT, POTENTIAL TO OCCUR AND COMMENTS**

SPECIES	SENSITIVITY STATUS	POTENTIAL TO OCCUR	HABITAT	RECENT VICINITY SURVEYS ¹	COMMENTS
INVERTEBRATES					
<i>Euphydryas editha quino</i> - quino checkerspot	Federal - Endangered State - None	High	host plant is dot-seed plantain; occurs in semi-open coastal sage scrub and chaparral	Anecdotal observations of single individuals in 1999 approx. 2,000 ft from project corridor.	Surveys conforming to USFWS protocol to be conducted within a year prior to construction.
<i>Streptocephalus woottoni</i> - Riverside fairy shrimp	Federal - Endangered State - None	Low (High if vernal pools present)	vernal pools	Not known to occur from recent surveys of project vicinity.	No vernal pools identified within or near project corridor.
<i>Branchinecta sandiegoensis</i> - San Diego fairy shrimp	Federal - Endangered State - None	Low (High if vernal pools present)	vernal pools	Not known to occur from recent surveys of project vicinity.	No vernal pools identified within or near project corridor.
REPTILES AND AMPHIBIANS					
<i>Bufo californicus</i> - arroyo toad	Federal - Endangered State - CSC	Low	riparian zones with dynamic, cobble-lined, shallow pools	Not known to occur from recent surveys of project vicinity.	Low likelihood due to lack of known occurrences in Salt Creek or Otay River and limited suitable habitat in project area.
<i>Crotalus ruber ruber</i> - red-diamond rattlesnake	Federal - None State - CSC	High	coastal sage scrub, desert scrub, thorn scrub, and chaparral habitats	Known to occur in Salt Creek/Otay River area.	Presumed to occur within upland habitats in eastern portion of the project.
<i>Scaphiopus hammondi</i> - western spadefoot toad	Federal - None State - CSC	Moderate	breeds in quiet streams, ephemeral ponds, and vernal pools	Known to occur in Salt Creek and Otay River.	Moderate potential due to limited wetlands in project area.
<i>Clemmys marmorata pallida</i> - southwestern pond turtle	Federal - None State - CSC	Moderate	freshwater ponds and lakes	Known to occur in Lower Otay Reservoir, and pothole sand mining ponds in Otay River.	Moderate potential due to limited wetlands in project area.

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TABLE 5 - SENSITIVE ANIMALS (Continued) HABITAT, POTENTIAL TO OCCUR AND COMMENTS

SPECIES	SENSITIVITY STATUS	POTENTIAL TO OCCUR	HABITAT	RECENT VICINITY SURVEYS ¹	COMMENTS
<i>Cnemidophorus hyperythrus beldingi</i> - orange-throated whiptail	Federal - None State - CSC	High	coastal sage scrub, grasslands	Known to occur in Salt Creek/Otay River area.	Presumed to occur within upland habitats in eastern portion of the project.
<i>Phrynosoma coronatum blainvillei</i> - San Diego horned lizard	Federal - None State - CSC	High	coastal sage scrub	Known to occur in Salt Creek/Otay River area.	Presumed to occur within upland habitats in eastern portion of the project.
BIRDS					
<i>Accipiter cooperii</i> - Cooper's hawk	Federal - None State - CSC	High (low nesting potential)	riparian woodlands, eucalyptus woodlands, oak woodlands	Known to occur in Salt Creek/Otay River area.	No woodland habitats occur in project area, therefore, nesting potential low. Foraging habitat is present.
<i>Aquila chrysaetos</i> - golden eagle	Federal - None State - CSC	Moderate (low nesting potential)	scrub habitats, grasslands, cliffs	Not known to occur from recent surveys of project vicinity.	Very low likelihood of nesting in project area.
<i>Circus cyaneus</i> - northern harrier	Federal - None State - CSC	High (low nesting potential)	grasslands, salt and freshwater habitats	Known to occur in Salt Creek/Otay River area.	Presumed to utilize upland scrub and grassland habitat for foraging in the eastern portions of the project.
<i>Elanus leucurus</i> - white-tailed kite	Federal - None State - CSC	High (low nesting potential)	open country where grasslands, marshes, and agricultural fields provide rodent prey	Known to occur in Salt Creek/Otay River area.	Presumed to utilize upland scrub and grassland habitat for foraging in the eastern portion of the project
<i>Empidonax trailii extimus</i> - southwestern willow flycatcher	Federal - Endangered State - Endangered	Low	riparian forest, riparian scrub	Not known from Salt Creek/Otay River area.	Limited suitable riparian habitat in project area.
<i>Eremophila alpestris actia</i> - California horned lark	Federal - None State - CSC	High	open, sparsely vegetated habitats such as and grasslands, agriculture, etc.	Known to occur in Salt Creek/Otay River area.	Presumed to occur within grasslands in the eastern portion of the project.
<i>Campylorhynchus brunneicapillus cousei</i> - coastal cactus wren	Federal - None State - CSC	High	cactus thickets in southern cactus scrub, maritime succulent scrub or sage scrub	Known to occur in Salt Creek/Otay River area.	Presumed to occur within southern cactus scrub in the project area.

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TABLE 5 - SENSITIVE ANIMALS (Continued)
HABITAT, POTENTIAL TO OCCUR AND COMMENTS

SPECIES	SENSITIVITY STATUS	POTENTIAL TO OCCUR	HABITAT	RECENT VICINITY SURVEYS ¹	COMMENTS
<i>Poliophtila californica</i> - California gnatcatcher	Federal - Threatened State - CSC	High	coastal sage scrub	Known to occur in Salt Creek/Otay River area.	Presumed to occur within coastal sage scrub and broom baccharis scrub in the project area.
<i>Lanius ludovicianus</i> - loggerhead shrike	Federal - None State - CSC	High	agricultural land, desert wash and desert-edge scr, grassland or beach areas with scattered bushes, or broken chaparral	Known to occur in Salt Creek/Otay River area.	Presumed to occur grassland and sparsely vegetated shrub communities.
<i>Vireo bellii pusillus</i> - least Bell's vireo	Federal - Endangered State - Endangered	Moderate	riparian, southern willow scrub	Known to occur in Otay River area.	Limited potential due to small amount of riparian scrub habitat within the project area.
<i>Amphispiza belli belli</i> - Bell's sage sparrow	Federal - None State - CSC	Low	chaparral and coastal sage scrub	Formerly known to use dense sage scrub in project vicinity.	Not known from the project vicinity.
southern California rufous-crowned sparrow - <i>Aimophila ruficeps canescens</i>	Federal - None State - CSC	Moderate	coastal sage scrub	Known to occur in Salt Creek/Otay River area.	Presumed to occur in coastal sage scrub in the eastern portion of the project.
<i>Agelaius tricolor</i> - tri-colored blackbird	Federal - None State - CSC	Moderate	freshwater marsh for breeding; grasslands and agriculture for foraging	Known from Otay River.	May occur in the Otay River but nesting habitat does not occur in project corridor.
<i>Icteria virens</i> - yellow-breasted chat	Federal - None State - CSC	Moderate	riparian woodlands, primarily in the coastal lowland but will also use the foothill zone	Known from Otay River.	Limited potential due to small amount of riparian scrub habitat within the project area.
<i>Dendroica petechia</i> - yellow warbler	Federal - None State - CSC	Moderate (breeding potential low)	breeding restricted to riparian woodlands	Known from Otay River.	Limited potential for nesting due to lack of riparian woodland habitat within the project area.

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TABLE 5 - SENSITIVE ANIMALS (Continued)
HABITAT, POTENTIAL TO OCCUR AND COMMENTS

SPECIES	SENSITIVITY STATUS	POTENTIAL TO OCCUR	HABITAT	RECENT VICINITY SURVEYS ¹	COMMENTS
MAMMALS					
<i>Perognathus longimembris pacificus</i> - Pacific pocket mouse	Federal - Endangered State - CSC	Very Low	fine or sandy soils with sparse coastal sage scrub or disturbed grassland	No surveys conducted.	Outside of known range and appropriate soil type does not occur in project corridor.
<i>Chaetodipus fallax fallax</i> - northwestern San Diego pocket mouse	Federal - None State - CSC	High	coastal sage scrub and chaparral	No surveys have been conducted.	High potential to occur in coastal sage scrub and southern cactus scrub.
<i>Chaetodipus californicus femoralis</i> - Dulzura California pocket mouse	Federal - None State - CSC	High	coastal sage scrub and chaparral	No surveys have been conducted.	High potential to occur in coastal sage scrub and southern cactus scrub.
<i>Neotoma lepida intermedia</i> - San Diego desert woodrat	Federal - None State - CSC	High	coastal sage scrub and chaparral	No surveys have been conducted.	High potential to occur in coastal sage scrub and southern cactus scrub.
<i>Lepus californicus bennettii</i> - San Diego black-tailed jackrabbit	Federal - None State - CSC	High	coastal sage scrub, grassland	Known to occur in Salt Creek/Otay River area.	Presumed to occur within upland habitats in the eastern portions of the project.

CSC CDFG Species of Special Concern

¹ Databases used to describe survey data include CNDDDB, MSCP, GDP and New Millennium Biological Technical Report.

4.6 Jurisdictional Waters of the United States

The wetland habitats described above (Sections 4.1.4-4.1.9), all are under the jurisdiction of both ACOE and CDFG. In addition to these wetland habitats, several unvegetated waters of the U.S. intersect the preferred alignment corridor. These unvegetated waters vary in width from one to ten feet and generally drain from north to south into the Otay River. Figures 3-13 show these waters where they occur in and adjacent to the project corridor. In developed areas, the waters generally convey urban runoff through channelized drainages which flow through culverts under Main Street/Otay Valley Road before discharging into the Otay River. East of the quarry, the waters generally convey surface runoff from agricultural

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fields and natural habitats, through natural stream channels to the Otay River. Salt Creek receives flow mainly from surface runoff from agricultural areas, although the urban component is increasing with recent development.

4.7 Regional Corridors and Linkages

The eastern portion of the project area provides a potential regional wildlife corridor or habitat linkage connecting open space areas north and south of the Otay River (Otay River Corridor). The project area runs through a portion of this corridor; *i.e.*, the limited open space north of the Otay River. The corridor north of the Otay River is effectively limited to the open space between Olympic Parkway and the river valley due to extensive development in this area from Olympic Parkway to Proctor Valley Road. Natural habitats also occur east and west of Salt Creek (Salt Creek Corridor). However, these habitat patches are limited in extent due to agricultural and residential developments and therefore the Salt Creek Corridor is effectively a cul-de-sac which provides habitat but no corridor or linkage function (ERCE 1991).

4.8 Regional Resource Planning Context

In the context of NCCP, the Salt Creek and Wolf Canyon Sewer Project is within the jurisdiction of the MSCP for the City of Chula Vista Subarea. The MSCP and Chula Vista Subarea Plan provide for conservation of upland habitats and species through preserve design, regulation of impacts and uses, and management of the preserve. The Subarea Plan contains specifics regarding this project; the plan treats this project as a "planned facility." At present, the Subarea Plan has been conditionally approved by the Chula Vista City Council, and is being reviewed by the USFWS and the CDFG. An Implementing Agreement for the Subarea Plan also is being negotiated among the parties. Therefore, as noted in the mitigation section of this report, mitigation will be analyzed in some cases under the following two scenarios: 1) approval of the Subarea Plan and execution of the Implementing Agreement, and 2) no Subarea Plan and impacts for state- or federally-listed species authorized under federal and state Endangered Species Acts, including federal Sections 4(d), 7 or 10 and state Section 2081.

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5.0 PROJECT IMPACTS AND SIGNIFICANCE

5.1 Explanation of Determination of Significance

For this section, using CEQA Guidelines Section 15065[a], the following criteria are used to determine the significance of an impact:

- Substantial effect, including direct or indirect effects such as habitat fragmentation on a rare or endangered species of plant or animal or habitat of that species, is considered a significant impact.
- Substantial interference with the movement of any resident or migratory fish or wildlife species is considered a significant impact.
- Substantial reduction of habitat for fish, wildlife, or plants is considered a significant impact.

In addition, impacts considered adverse to the assemblage of a preserve design consistent with NCCP guidelines and planning efforts for this subregion are considered significant.

Impacts to biological resources can be *direct* - resulting from the loss of individuals of a species and/or permanent removal of habitat, *indirect* - resulting from changes in land use to adjacent natural habitat or native species (e.g., increased light, noise, and urban runoff, interruption of wildlife movement, fragmentation of habitat areas, etc.), or *cumulative* - resulting from the combined effect of multiple projects within the project vicinity. Direct and indirect impacts and their levels of significance are discussed in this section; cumulative impacts are discussed separately at the end of this section.

5.2 Vegetation Communities

Project impacts were calculated based on a 40-foot wide construction corridor. Potential impacts were evaluated as follows: direct, permanent impacts would result from construction of a 20-foot wide access road centered on the alignment. Temporary impacts resulting from construction activity would occur in an additional 10-foot wide strip on either side of the permanent impact area. Temporary impact calculations thus are separate from the permanent impacts associated with the access road.

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Direct impacts associated with the proposed alignment are provided in Table 6. Permanent and temporary impacts are identified for the staff recommended alignment alternative (RA) with both Policy Option 1 (PO1) and Policy Option 2 (PO2); i.e., RA+PO1 and RA+PO2.

**TABLE 6. IMPACTS TO VEGETATION COMMUNITIES
TWO ALIGNMENT ALTERNATIVES**

Vegetation Type	Permanent Impacts		Temporary Impacts	
	RA + PO 1	RA + PO2	RA + PO 1	RA + PO2
Total Natural Upland Communities	3.21	2.22	4.36	3.38
Annual Grassland	0.36	0.43	0.38	0.43
Broom Baccharis Scrub	0.89	0.04	0.89	0.03
Disturbed Broom Baccharis Scrub	0.22	—	0.20	—
Coastal Sage Scrub	1.56	1.69	2.73	2.87
Disturbed Coastal Sage Scrub	0.18	0.05	0.16	0.04
Southern Cactus Scrub	—	0.01	0.004	0.01
Total Wetland Communities	0.31	0.24	0.35	0.26
Cismontane Alkali Marsh	0.05	0.03	0.06	0.03
Cismontane Alkali Marsh/Freshwater Marsh	0.07	0.07	0.07	0.07
Disturbed Wetland	0.11	0.11	0.09	0.09
Mule Fat Scrub	0.002	—	0.01	—
Mixed Riparian Scrub	0.03	0.03	0.07	0.07
Tamarisk Scrub	0.05	—	0.05	—
Total Non-natural Upland Communities	26.16	27.96	24.95	26.73
Agriculture	0.83	1.76	0.82	1.76
Disturbed Habitat	12.44	12.88	11.38	11.79
Developed Land	12.89	13.32	12.75	13.18
TOTAL*	29.72	30.41	29.67	30.38

* Numbers may not total precisely due to rounding error.

5.2.1 Direct Impacts

In summary, the proposed project will permanently impact 2.2 or 3.2 acres of natural upland habitat and 0.2 or 0.3 acre of wetlands depending on the policy option selected.

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Temporary impacts associated with construction include 3.4 or 4.4 acres of natural upland habitat and 0.3 or 0.4 acre of wetland habitat. Temporary impacts to habitat within potential staging areas are limited to annual grassland, agriculture, disturbed habitat and developed land (*Table 2*). The small area of coastal sage scrub (0.8 acre) found within one staging area will be completely avoided.

All direct permanent and temporary impacts to natural upland habitats and wetland habitats would be considered significant because they either are known to support sensitive species, have high potential to support sensitive specie, or are regulated (*e.g.*, wetlands). Impacts to non-natural upland communities (agriculture, disturbed habitat and developed land) are not considered significant.

5.2.2 Indirect Impacts

Although Best Management Practices (BMP's) will be implemented to reduce indirect impacts to vegetation communities during construction, dust created by construction may affect some adjacent vegetation communities in the short term. However, short-term indirect impacts would be temporary and likely would not reduce the long-term viability of the plant communities. Long-term indirect impacts such as dust, debris, or trampling, could also result from sewer maintenance activities. However, maintenance of the sewer pipeline is anticipated to be minimal for the proposed facilities. In the most maintenance-intensive areas (such as portions of the gravity sewer that have minimal fall), maintenance may be required on a monthly basis. Most portions of the line would only require annual maintenance. Generally, an average maintenance schedule for the facilities would be once every three months. Any indirect impacts resulting from this infrequent level of maintenance would be minimal. Therefore, indirect impacts to vegetation communities are not considered significant.

5.3 Sensitive Plant Species

Table 7 lists the sensitive plant species observed or that have potential to occur in the study area. Based on current survey information, eight sensitive plants occur in the project area; however no state- or federally-listed plant species would be affected by the project.

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TABLE 7
RARE PLANT LOCATIONS STAGING AREAS AND RECOMMENDED
ALIGNMENT ALTERNATIVE WITH POLICY OPTIONS 1 AND 2

Species	Staging Areas	RA + PO 1	RA + PO 2
California adolphia	1		
South Coast saltscale		1	1
San Diego marsh-elder	1	7	8
southwestern spiny rush		2	1
San Diego sunflower	1	21	21
snake cholla		1	1
San Diego barrel cactus		2	1
variegated dudleya		1	1
TOTAL	3	35	34

5.3.1 Direct Impacts

Because most of these sensitive plant species are difficult to re-establish (with the notable exception being San Diego sunflower), all plants found within the permanent and temporary impact areas are considered to be 100% lost. Within the staging areas, sensitive species will be avoided and therefore no direct impacts are anticipated.

Impacts to South Coast saltscale, San Diego barrel cactus, San Diego marsh-elder and southwestern spiny rush are not considered significant because of the small number of locations affected by the project and the regional abundance of these species. Impacts to variegated dudleya and snake cholla are considered to be significant because of the narrow endemic status of these plants under the MSCP. Impacts to San Diego sunflower are also significant due to the large number of locations impacted.

5.3.2 Indirect Impacts

Although BMP's will be implemented to reduce indirect impacts to sensitive plants during construction, dust created by construction may affect some adjacent sensitive plants in the short term. However, short-term indirect impacts would be temporary and likely would not reduce the long-term viability of the species. Long-term indirect impacts such as dust, debris, or trampling, could also result from sewer maintenance activities. However, maintenance of the sewer pipeline is anticipated to be minimal for the proposed facilities. In the most

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maintenance-intensive areas (such as portions of the gravity sewer that have minimal fall), maintenance may be required on a monthly basis. Most portions of the line would only require annual maintenance. Generally, an average maintenance schedule for the facilities would be once every three months. Any indirect impacts resulting from this infrequent level of maintenance would be minimal. Therefore indirect impacts to sensitive plants are not considered significant.

5.4 Sensitive Animal Species

Due to the limited information regarding the location of sensitive animal species within the project alignment, the number of sensitive species to be directly or indirectly affected by the project cannot be quantified. General statements, however, can be made regarding the significance of potential impacts to sensitive animal species. A factor in determining significance is the narrow width of the alignment relative to the areas of adjacent available habitat for sensitive animals in the project vicinity.

5.4.1 Direct Impacts

Table 8 contains a list of sensitive animals which may occur within or near the proposed alignment area, based on available habitat and project location, and listed species known from the general vicinity. This list matches the animals listed in *Table 5*. *Table 8* provides a rationale for determining whether direct impacts to the listed species are significant based on each species' potential to occur with the project corridor.

5.4.2 Indirect Impacts

Short-term indirect impacts include construction noise impacts to sensitive nesting bird species. Species potentially affected by such activities include, but are not limited to, California gnatcatcher, least Bell's vireo and nesting raptors. For areas where construction is proposed outside the breeding season, no significant indirect impacts to these species are anticipated.

Significant indirect impacts to quino checkerspot could result from project construction.

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TABLE 8 **SIGNIFICANCE RATIONALIZATION FOR** **DIRECT IMPACTS TO SENSITIVE ANIMAL SPECIES**

Significant/ Not Significant	Rationale	Species
Not Significant	These species are highly unlikely to occur due to lack of suitable habitat within the project area or lack of recent records of the species in the project vicinity.	Riverside fairy shrimp San Diego fairy shrimp arroyo toad southwestern willow flycatcher Bell's sage sparrow Pacific pocket mouse
Not Significant	These species are relatively abundant within available habitat in the project area and project implementation would effect a small portion of the available habitat for these species. For bird species, impacts to nesting habitat are not significant because potential for nesting within the project area is low due to lack of suitable habitat; impacts to foraging habitat is not significant due to the low acreage of impact to available suitable habitat relative to the project vicinity.	red-diamond rattlesnake western spadefoot toad southwestern pond turtle orange-throated whiptail San Diego horned lizard Cooper's hawk golden eagle northern harrier white-tailed kite least Bell's vireo tri-colored black bird yellow-breasted chat yellow warbler northwestern San Diego pocket mouse Dulzura California pocket mouse San Diego desert woodrat San Diego black-tailed jackrabbit
Not Significant	These species have a moderate to high potential to nest within the project area but the species are relatively abundant within available habitat in the project area and implementation of the project would effect only a small portion of the available nesting habitat in the project vicinity.	California horned lark coastal cactus wren loggerhead shrike southern California rufous-crowned sparrow
Significant	These species are federally-listed and have the potential to occur within the project area due to the presence of suitable habitat.	quino checkerspot California gnatcatcher

Although BMP's will be implemented to reduce indirect impacts to sensitive animals during

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construction, dust created by construction may affect some adjacent sensitive animals in the short term. However, short-term indirect impacts would be temporary and likely would not reduce the long-term viability of the species. Long term indirect impacts resulting from sewer maintenance activities are anticipated to be minimal for the proposed facilities. In the most maintenance intensive areas (such as portions of the gravity sewer that have minimal fall), maintenance may be required on a monthly basis. Most portions of the line would only require annual maintenance. Generally, an average maintenance schedule for the facilities would be once every three months. Any indirect impacts resulting from this infrequent level of maintenance would be minimal. Therefore indirect impacts to sensitive animal species other than those identified above are not considered significant.

5.5 Jurisdictional Waters of the United States

Impacts to jurisdictional waters of the U.S. associated with the proposed alignment are summarized in *Table 9*. Impacts are identified for the recommended alignment alternative (RA) with both Policy Option 1 (PO1) and Policy Option 2 (PO2).

**TABLE 9. IMPACTS TO WATERS OF THE U.S.
TWO ALIGNMENT ALTERNATIVES**

	Permanent Impacts		Temporary Impacts	
	RA + PO 1	RA + PO2	RA + PO 1	RA + PO2
Total Wetlands	0.31	0.24	0.35	0.26
Total Unvegetated Waters of the U.S.	0.04	0.05	0.04	0.05

5.5.1 Direct Impacts

Direct permanent and temporary impacts to waters of the U.S., including wetlands are considered significant.

5.5.2 Indirect Impacts

Short-term indirect impacts to waters of the U.S., including wetlands, are not anticipated to occur due to the implementation of BMP's to control erosion, runoff, sedimentation and dust. Long-term indirect impacts to waters of the U.S., including wetlands, are not

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anticipated to occur due to the limited use of the access road and implementation of design measures to prevent long-term impacts to water quality (*e.g.*, Arizona crossings and non-porous materials for access road construction).

5.6 Regional Corridors and Linkages

The project would potentially affect the Otay River Corridor. Temporary impacts would include restricted movement of mainly terrestrial animals during the project construction. However, project construction would be phased so that disruption of wildlife movement over a large area would not occur. In terms of the long-term impacts, the access road would be of limited width, human activity would be infrequent, and visual continuity would be maintained. Therefore, long-term direct permanent impacts to wildlife movement in the Otay River Corridor would not be considered significant.

5.7 Cumulative Impacts

Cumulative impacts to habitat and species would result from the implementation of this project in combination with planned development in the Otay Ranch portion of the City of Chula Vista; *e.g.*, Village 3, Village 4, Village 8, Village 9 and a potential university (Otay Ranch Joint Planning Project 1993). The sewer project will mainly impact sage scrub habitats and a limited amount of wetlands. When assessed from a cumulative perspective, impacts to these habitats may result in the potential loss of sage scrub and wetland species including, but not limited to, orange-throated whiptail, western spadefoot toad, cactus wren, California gnatcatcher, San Diego desert woodrat, black-tailed jackrabbit, San Diego sunflower, variegated dudleya, and southwestern spiny rush. However, given the clustering of planned development in areas of limited habitat and the proposed regional preserve in the Otay Ranch GDP, as well as conservation and management of resources provided in the Otay Ranch Resource Management Plan (RMP), cumulative impacts to non-listed species would not substantially affect species viability in the region and therefore are not significant. Potential cumulative impacts to listed species potentially occurring in the project area are considered significant.

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6.0 RECOMMENDED MITIGATION MEASURES

Recommended mitigation measures differ for the two permitting scenarios by which this project may receive approval (See *Section 4.6* for the different permitting scenarios). The two scenarios are referred to here as the "Subarea Plan scenario" and the "Endangered Species Act (ESA) scenario." It should be noted that in the discussion of mitigation related to the ESA scenario, impacts which are significant under CEQA, but would not require permits or mitigation under the ESA, are discussed as well.

6.1 Vegetation Communities

Under the Subarea Plan scenario, the conservation analysis and mitigation measures provided for by the MSCP and the City Subarea Plan would provide adequate mitigation for impacts to all natural upland habitats to be affected by project implementation. Additional mitigation for wetland habitat pursuant to the federal Clean Water Act and state Fish and Game Code would still be required and is discussed in *Section 6.4*. Within the staging areas, natural upland habitats will be surveyed prior to construction and protected with snow fencing to prevent encroachment.

Under the ESA scenario, mitigation would need to compensate for impacts to listed species and their habitats. Mitigation ratios and location of mitigation sites would need to be negotiated with the wildlife agencies. Habitat preservation at a ratio of 1:1 mitigation ratio for sage scrub habitat (disturbed and undisturbed coastal sage scrub and broom baccharis scrub) and 3:1 for southern cactus scrub, would be implemented as mitigation for direct, permanent impacts. Under CEQA, additional mitigation for impacts to annual grassland would need to be provided at a ratio of 0.5:1. Temporary impacts to natural habitat areas would be mitigated by revegetation of the temporary impact areas using a native seed mix. As in the Subarea Plan scenario, separate wetland mitigation would need to be provided pursuant to the federal Clean Water Act and state Fish and Game Code and is discussed in *Section 6.4*. Within the staging areas, natural upland habitats will be surveyed prior to construction and protected with snow fencing to prevent encroachment.

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6.2 Sensitive Plant Species

Under the Subarea Plan scenario, Spring 2001 surveys for narrow endemics will be conducted to supplement the current database regarding sensitive species within the area of potential effect. A determination will be made that no more than 5% of the individuals within the area of potential effect, for each narrow endemic species, would be directly impacted by the project. Mitigation for impacts to non-covered species would be incorporation of seed or nursery stock of those species into the preserved and/or restoration areas. As an impact-reducing mitigation measure, salvagable plant species (San Diego barrel cactus, snake cholla and variegated dudleya) will be salvaged prior to construction and installed within the preserve. Also, impacts to San Diego sunflower will be mitigated through the use of San Diego sunflower seed or container plants in the revegetation of temporary impact areas on the project site. Any narrow endemic plant species found within the final staging areas will be avoided through the placement of snow fencing around those populations prior to construction.

Under the ESA scenario the following mitigation would be implemented. As an impact-reducing mitigation measure, salvagable plant species (San Diego barrel cactus, snake cholla and variegated dudleya) will be salvaged prior to construction and installed within the preserve. Also, impacts to San Diego sunflower will be mitigated through the use of San Diego sunflower seed or container plants in the revegetation temporary impact areas on the project site. Impacts to variegated dudleya and snake cholla would be mitigated through the preservation of habitat containing those species within the preserve. Any sensitive plant species found within the final staging areas will be avoided through the placement of snow fencing around those populations prior to construction.

6.3 Sensitive Animal Species

6.3.1 Direct Impacts

Under the Subarea Plan scenario, only potential impacts to quino checkerspot would require mitigation and a pre-construction survey within one year of construction will be conducted according to USFWS protocol in areas containing potential habitat. If adult quino checkerspot butterfly(s) are found in the project area, avoidance through construction techniques and facility maintenance activities shall be required. If avoidance is not possible, purchase of mitigation land in an offsite location would be required. Any impacts to the species would require separate permitting under the federal ESA.

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Under the ESA scenario, potential direct impacts to California gnatcatcher likely would require 1:1 mitigation for pairs and restriction of clearing habitat during the breeding season. As mitigation for temporary impacts to California gnatcatcher, nest site avoidance during the breeding season would be adequate. California gnatcatcher nest sites within potential staging areas will be avoided and fenced-off prior to construction. A focused survey for quino checkerspot butterfly would need to be conducted within one year prior to construction in portions of the project area containing potential habitat. If adult quino checkerspot butterfly are found in the project area, avoidance through construction techniques and facility maintenance activities shall be required. If avoidance is not possible, purchase of mitigation land in an offsite location would be required. Any impacts to the species would require separate permitting under the federal ESA.

6.3.2 Indirect Impacts

Under the Subarea Plan scenario, nesting bird surveys would need to be conducted in areas where it is determined (by the City's biologist) that noise associated with clearing, grading or grubbing potentially may negatively impact least Bell's vireo, California gnatcatcher, or raptor nesting sites. In areas potentially affecting least Bell's vireo nesting sites, noise levels will not exceed 60 CNEL during the breeding season, March 15 to September 15. In areas potentially affecting raptor and/or California gnatcatcher nesting sites, noise levels will be modified, if necessary, to prevent noise from negatively impacting the breeding success of the pair during the breeding season (December 1 to May 31 for raptors and March 1 to August 15 for California gnatcatcher). These mitigation measures would apply to both the proposed alignments and the potential staging areas.

Under the ESA scenario, nesting bird surveys would need to be conducted within 500 feet of construction areas. If listed bird species are found nesting in these areas, mitigation measures will be either to restrict construction activity during the breeding season or reduce noise level to below 60 CNEL in those areas if construction occurs during the breeding season.

6.4 Jurisdictional Waters of the United States

Mitigation for impacts to jurisdictional waters, under either mitigation scenario, will require permits from ACOE pursuant to Section 404 of the federal Clean Water Act, the Regional Water Quality Control Board, pursuant to Section 401 of the federal Clean Water Act, and with the CDFG pursuant to Section 1601 of the California Fish and Game Code. Direct,

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permanent impacts to wetland habitats would be mitigated by the creation of like-quality and like-functioning habitat at a mitigation ratio of 2:1. Direct, temporary impacts to wetland habitats would be mitigated by the restoration of those habitats within the temporary impact areas. Direct, permanent impacts to unvegetated waters would be mitigated through project conformance with the Subarea Plan which specifies types of materials to be used at drainage crossings to reduce the significance of those impacts. Direct, temporary impacts to unvegetated waters would be mitigated through the restoration of pre-construction contours in those impact areas. Jurisdictional waters, including wetlands, will be avoided in the staging areas through the placement of snow fencing surrounding those sensitive areas prior to construction.

6.5 Cumulative Impacts

Under the Subarea Plan scenario, cumulative impacts are mitigated by the establishment of the MSCP Multiple Habitat Planning Area (MHPA) which conserves sensitive habitat, including the potentially impacted species listed in *Section 5.6*.

Under the ESA scenario and pursuant to CEQA, cumulative impacts are mitigated through the conservation of habitats as specified in the recommended mitigation measures for vegetation communities (*Section 6.1*).

7.0 ACKNOWLEDGMENTS

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APPENDICES

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APPENDIX A

**SALT CREEK GRAVITY SEWER
WETLAND DELINEATION**

FLORAL SPECIES LIST

VASCULAR PLANT SPECIES

ANGIOSPERMAE (DICOTYLEDONES)

AIZOACEAE - CARPET-WEED FAMILY

- * *Carpobrotus edulis* - hottentot-fig
- * *Mesembryanthemum crystallinum* - crystal ice plant

ANACARDIACEAE - SUMAC FAMILY

- Malosma laurina* - laurel sumac
- Rhus integrifolia* - lemonadeberry
- * *Schinus molle* - Peruvian pepper-tree

APIACEAE - CARROT FAMILY

- * *Foeniculum vulgare* - sweet fennel

ASTERACEAE - SUNFLOWER FAMILY

- Ambrosia psilostachya* var. *californica* - western ragweed
- Artemisia californica* - coastal sagebrush
- Aster subulatus* - slender aster
- Baccharis salicifolia* - mule fat
- Baccharis sarothroides* - chaparral broom
- * *Centaurea melitensis* - star-thistle
- * *Chrysanthemum coronarium* - garland chrysanthemum
- * *Conzys canadensis* - horseweed
- * *Cotula australis* - Australian brass-buttons
- * *Cynara cardunculus* - cardoon, artichoke thistle
- Eriophyllum confertiflorum* var. *confertiflorum* - long-stem golden yarrow
- * *Filago gallica* - narrow-leaf filago

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- Gnaphalium bicolor* - bicolor cudweed
Gnaphalium californicum - California everlasting
Gutierrezia californica - California matchweed
Hazardia squarrosa ssp. *grindelioides* - saw-toothed goldenbush
* *Hedypnois cretica* - Crete hedypnois
Hemizonia fasciculata - fascicled tarweed
Heterotheca grandiflora - telegraph weed
Isocoma menziesii ssp. *veneta* - coastal goldenbush
Iva hayesiana - San Diego marsh-elder
* *Lactuca serriola* - prickly lettuce
Lessingia filaginifolia - virgate cudweed aster
Osmadenia tenella - rosin-weed
* *Picris echioides* - bristly ox-tongue
* *Sonchus oleraceus* - common sow-thistle
Stephanomeria virgata - twiggy wreathplant
Stylocline gnaphalioides - everlasting nest-straw
Viguiera laciniata - San Diego County viguiera
Xanthium strumarium - cocklebur

BORAGINACEAE - BORAGE FAMILY

- Heliotropium curassavicum* - wild heliotrope
Raphanus sativus - wild radish

BRASSICACEAE - MUSTARD FAMILY

- * *Brassica nigra* - black mustard
* *Brassica rapa* - field mustard

CACTACEAE - CACTUS FAMILY

- * *Opuntia ficus-indica* - Indian fig
Opuntia prolifera - coast cholla

CAPRIFOLIACEAE - HONEYSUCKLE FAMILY

- Sambucus mexicana* - Mexican elderberry

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APPENDIX A (Continued)

CHENOPODIACEAE - GOOSEFOOT FAMILY

- * *Atriplex semibaccata* - Australian saltbush
- * *Atriplex triangularis* -
- * *Beta vulgaris* -
- * *Chenopodium ambrosioides* - Mexican tea
- * *Salsola tragus* - Russian-thistle

CONVOLVULACEAE - MORNING-GLORY FAMILY

- * *Convolvulus arvensis* - bindweed

EUPHORBIACEAE - SPURGE FAMILY

- Chamaesyce albomarginata* - rattlesnake spurge
- Eremocarpus setigerus* - doveweed
- Ricinus communis* - castor-bean

FABACEAE - PEA FAMILY

- Astragalus trichopodus* - Santa Barbara locoweed
- Lotus scoparius* - deerweed
- * *Melilotus albus* - white sweet-clover

GERANIACEAE - GERANIUM FAMILY

- * *Erodium cicutarium* - red-stemmed filaree

LAMIACEAE - MINT FAMILY

- * *Marrubium vulgare* - horehound
- Salvia mellifera* - black sage

MALVACEAE - MALLOW FAMILY

- * *Malva parviflora* - cheeseweed
- Malvella leprosa* - alkali-mallow

MYOPORACEAE - MYOPORUM FAMILY

- * *Myoporum laetum* - myoporum

MYRTACEAE - MYRTLE FAMILY

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APPENDIX A (Continued)

- * *Eucalyptus* sp. - eucalyptus

PLANTAGINACEAE - PLANTAIN FAMILY

- Plantago erecta* - dot-seed plantain
- * *Plantago lanceolata* - English plantain

PLATANACEAE - SYCAMORE FAMILY

- Platanus racemosa* - western sycamore

POLYGONACEAE - BUCKWHEAT FAMILY

- Eriogonum fasciculatum* - California buckwheat
- Polygonum lapathifolium* - willow weed
- * *Rumex crispus* - curly dock

SALICACEAE - WILLOW FAMILY

- Salix exigua* - narrow-leaved willow
- Salix gooddingii* var. *gooddingii* - black willow
- Salix lasiolepis* var. *bracelinae* - arroyo willow

SISMONDSIACEAE - JOJOBA FAMILY

- Simmondsia chinensis* - jojoba

SOLANACEAE - NIGHTSHADE FAMILY

- * *Nicotiana glauca* - tree tobacco
- Solanum americanum* - small-flowered nightshade

TAMARICACEAE - TAMARISK FAMILY

- * *Tamarix* sp. - tamarisk

ANGIOSPERMAE (MONOCOTYLEDONES)

ARECACEAE - PALM FAMILY

- Washingtonia filifera* - California fan palm

CYPERACEAE - SEDGE FAMILY

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APPENDIX A (Continued)

- * *Cyperus involucratus* - African umbrella-plant
- Eleocharis macrostachya* - pale spike-rush
- Scirpus americanus* - winged three-square

JUNCACEAE - RUSH FAMILY

- Juncus acutus* - spiny rush
- Juncus mexicanus* - Mexican rush

LILIACEAE - LILY FAMILY

- Yucca whipplei* - our lord's candle

POACEAE - GRASS FAMILY

- * *Arundo donax* - giant reed
- * *Avena barbata* - slender oat
- * *Bromus diandrus* - ripgut grass
- * *Bromus hordeaceus* - soft chess
- * *Bromus madritensis* ssp. *rubens* - foxtail chess
- * *Cortaderia selloana* - pampas grass
- * *Cynodon dactylon* - Bermuda grass
- Distichlis spicata* - salt grass
- * *Echinochloa crus-galli* - barnyard grass
- * *Lolium multiflorum* - Italian ryegrass
- * *Lolium perenne* - perennial ryegrass
- Nassella pulchra* - purple needlegrass
- * *Polypogon monspeliensis* - rabbit's-foot grass

TYPHACEAE - CATTAIL FAMILY

- Typha angustifolium* - cattail

- * signifies introduced (non-native) species

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Salt Creek Interceptor and Wolf Canyon Trunk Sewer Project

APPENDIX B
SPECIES SENSITIVITY CATEGORIES

Federal (1996)

- Endangered. Taxa threatened throughout all or a significant portion of their range.
- Threatened. Taxa likely to become endangered in the foreseeable future.
- Candidate. Taxa for which the USFWS has enough information on biological vulnerability and threat(s) to support listing them as endangered or threatened species.

State of California (1990)

- Endangered. Taxa which are in serious danger of becoming extinct throughout all, or a significant portion, of their range due to one or more causes including loss of habitat, change in habitat, over exploitation, predation, competition, or disease (Section 2062 of the Fish and Game Code).
- Threatened. Taxa which, although not presently threatened with extinction, are likely to become endangered species in the foreseeable future (Section 2067 of the Fish and Game Code).
- Rare. Taxa which, although not presently threatened with extinction, are present in such small numbers throughout their range that they may become endangered if the present environment worsens (Section 1901 of the Fish and Game Code).
- Candidate. Taxa which the Fish and Game Commission has formally noticed as being under review by the Department in addition to the list of threatened and endangered species.

Biological Resources Technical Report
Salt Creek Interceptor and Wolf Canyon Trunk Sewer Project

APPENDIX B (Continued)

California Native Plant Society (1994)

Lists

- 1A: Presumed Extinct in California
- 1B: Rare or Endangered in California and Elsewhere
- 2: Rare or Endangered in California, More Common Elsewhere
- 3: Need More Information
- 4: Plants of Limited Distribution

Note: Plants on CNPS list 1B meet California Department of Fish and Game Criteria for Rare or Endangered listing.

R-E-D code

- R (Rarity)
 - 1- Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction or extirpation is low at this time.
 - 2- Occurrence confined to several populations or to one extended population.
 - 3- Occurrence limited to one or a few highly restricted populations, or present in such small numbers that it is seldom reported.
- E (Endangerment)
 - 1- Not endangered
 - 2- Endangered in a portion of its range
 - 3- Endangered throughout its range
- D (Distribution)
 - 1- More or less widespread outside of California
 - 2- Rare outside California
 - 3- Endemic to California

Appendix C

Cultural Resources Technical Report

**RESULTS OF
AN ARCHAEOLOGICAL
EVALUATION OF CULTURAL
RESOURCES WITHIN THE
PROPOSED CORRIDOR FOR THE
SALT CREEK SEWER PROJECT**

City of Chula Vista

Prepared for:

*Dudek & Associates
605 Third Street
Encinitas, California 92024*

Prepared by:

*Brian F. Smith and Associates
14678 Ibex Court
San Diego, California 92129
(858) 484-0915*

October 23, 2000

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October 23, 2000

National Archaeological Data Base Information

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Report Date: October 23, 2000

Report Title: "Results of an Archaeological Evaluation of Cultural Resources
Within the Proposed Corridor for the Salt Creek Sewer Project"

Submitted to: Dudek & Associates
605 Third Street
Encinitas, California 92024

Submitted by: Brian F. Smith and Associates
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USGS Quadrangles: Imperial Beach, Otay Mesa, Jamul, and National City,
California (7.5 minute)

Study Area: 24-mile alignment

Key Words: USGS Imperial Beach, Otay Mesa, Jamul, and National City
Quadrangle (7.5 minute); 24-mile sewer pipeline alignment; testing
of 20 sites; disturbed; not important; village site: SDI-4732; SDI-
4738; SDI-7217B; SDI-11,364; SDI-11,374; SDI-11,378; SDI-
12,278; SDI-12,288; SDI-12,291; SDI-12,293; SDI-12,809; SDI-
14,204; SDI-14,208; SDI-14,211; SDI-14,218; SDI-14,220; SDI-
14,221; SDI-14,225; SDI-14,229; SDI-14,233; Wolf Canyon
Lateral; Olympic Training Center Lateral, Salt Creek.

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1.0 INTRODUCTION

The following report describes an archaeological site evaluation program for the Salt Creek Sewer Project conducted by Brian F. Smith and Associates (BFSA) in conjunction with the preparation of an Environmental Impact Report by Dudek and Associates for the City of Chula Vista. The study area stretches from the Salt Creek drainage on the east side of Otay Ranch to Interstate 5 on the west, following the course of Salt Creek and the Otay River in the City of Chula Vista, California (Figure 1.0-1 and 1.0-2). The project includes the installation of sewer pipelines that will service the new home development at Otay Ranch. The proposed project will consist of a 24-mile pipeline, including laterals up Wolf Canyon and to the Olympic Training Center. For most of the pipeline alignment, existing roads (both dirt and paved) will be used for the pipeline (Figure 1.0-2). The archaeological study was conducted in accordance with the environmental guidelines of the City of Chula Vista and in compliance with the California Environmental Quality Act (CEQA).

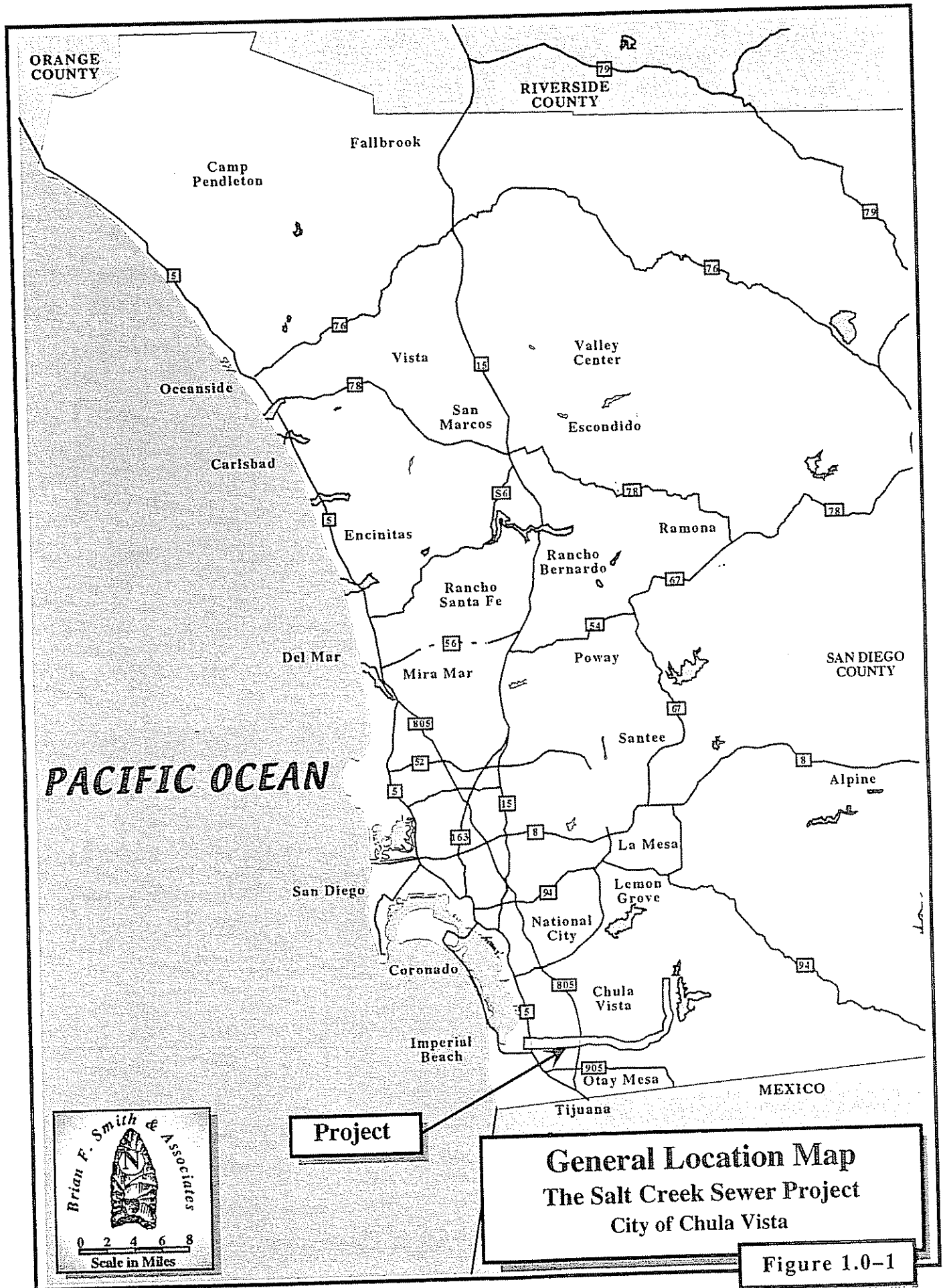
Throughout the 24-mile alignment, previous archaeological reconnaissances had been completed by various archaeologists of the past 20 years. These surveys have documented the presence of 28 cultural resources within the project's Area of Potential Effect (APE). Some cultural resources were previously evaluated for significance; however, most sites in the APE have not been tested for significance.

The scope of work for the cultural resources assessment of the potential impacts represented by the pipeline project include a reconnaissance of the alignment to relocate the recorded archaeological sites as well as to review the APE for any archaeological materials that may have been missed during previous surveys. All resources that were partially within the APE were tested for significance only for that portion of the site within the APE. Previously tested sites were not tested again. For the 28 sites within the Salt Creek Sewer, Wolf Canyon Sewer, and the Olympic Training Center Sewer APE, 20 sites were subjected to some level of significance testing. For those sites that have been previously tested, those test reports were reviewed to determine if the sites were considered important or if the testing covered the portion of the site actually affected by the proposed pipeline. The testing program included surface collections of artifacts within the APE, shovel tests to determine the presence or absence of subsurface deposits, and one-meter-square test units that were used to sample subsurface deposits. All collected artifacts were returned to the laboratory at BFSA for cataloging and analysis.

In many cases, the review of maps, aerial photographs, and the current setting was sufficient to conclude that the locations of suspected sites, or the locations of previously recorded sites, were highly disturbed, and the modifications of land forms by grading, paving or other construction activities had significantly reduced or eliminated the potential for the existence of intact deposits of cultural materials. This was especially true of sites located west of Otay Ranch to Interstate 5.

Based upon the results of the field investigations, the proposed installation will not affect any significant archaeological sites. Significant deposits exist along the APE, especially where the pipeline follows the Otay River course within the Otay Ranch; however, these deposits do not appear to be susceptible to any direct impacts. The proposed alignment of the sewer line will not impact any significant archaeological sites, and therefore, mitigation measures to reduce direct impacts will not be necessary. However, monitoring of construction excavation for the pipeline will be necessary, because the potential exists to discover buried cultural resources anywhere along the proposed APE.

All phases of work under this contract were directed by Brian F. Smith. The field and laboratory personnel consisted of Johnna L. Buysse, Charles P. Callahan, Devin A. Callahan, Sung An, Jeff Szymanski, Helen Wilson, Clarence Hoff, Richard Savitch, Kent Smolik, and Kimberly Wade. This report was written by Brian Smith. The graphics and production staff consisted of Samantha Stotts and Robert Hernandez.



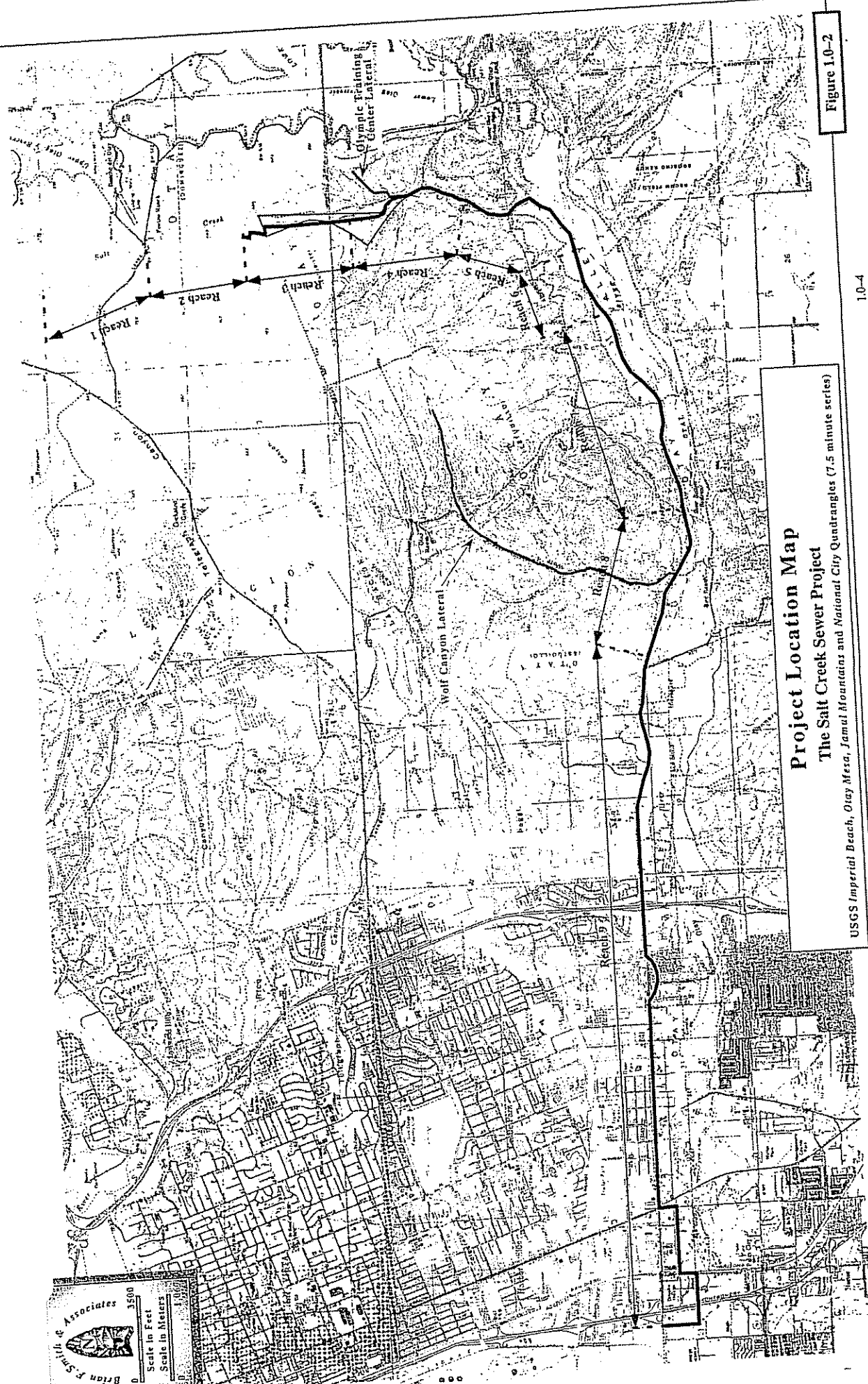
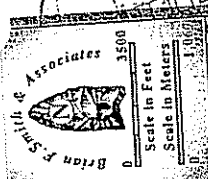


Figure 1.0-2

Project Location Map
The Salt Creek Sewer Project
USGS Imperial Beach, Otay Mesa, Jamul Mountains and National City Quadrangles (7.5 minute series)



2.0 PROJECT SETTING AND BACKGROUND RESEARCH

The project setting includes the natural physical, geological, and biological context of the proposed project, as well as the cultural setting of prehistoric and historic human activities in the general area. The following section discusses both the environmental and cultural settings at the subject property, the relationship between the two, and the relevance of that relationship to the project.

2.1. Environmental Setting

The proposed Salt Creek Sewer Project is located predominantly in the unsectioned areas of Rancho Otay (Estudillo), south of San Miguel Mountain, in Townships 17 and 18 South, Range 1 West, in portions of USGS *National City*, *Imperial Beach*, and *Otay Mesa* quadrangles (Figures 1.0-1 and 1.0-2). The topography within the project area is dominated by grass-covered foothills that are bisected by the seasonal drainages of Salt Creek and the Otay River drainage system. Elevations within the project range from approximately 540 feet above mean sea level (AMSL) on the east side to approximately 20 feet AMSL where the sewer crosses Interstate 5. Land use patterns in historic and recent periods have centered around agricultural activities, including cattle grazing and cultigens, which have greatly affected the native vegetation communities that once existed in this area (Beauchamp 1986). Most of the project area west of Otay Ranch has been developed and paved.

2.1.1 Physical Environment

The region surrounding the project encompasses a system of igneous and sedimentary geological formations. The project itself is situated in gently rolling knolls and gentle slopes, with San Miguel Mountain to the north and the Jamul Mountains to the east. This geologic mass consists of a series of knolls and mesas that are cut by small canyons and drainages located in the Coastal Plains Physiographic Province. Much of this area is composed of Pliocene marine and marine terrace deposits, known as the Otay and San Diego formations (Kennedy and Tan 1977). The San Diego Formation is composed of gray friable sandstone and conglomerate. The Otay Formation underlies the San Diego and consists of bentonitic clays. The juncture of the coastal plain and foothill provinces to the east is comprised of Plio-Pleistocene, non-marine deposits typically consisting of angular metavolcanic detritus. The hills to the east of the project area are comprised of Jurassic volcanics, a collection of mildly metamorphosed volcanic and volcanoclastic rock formations, characterized by the Black Mountain or Santiago Peak Volcanics (Biehler 1979). Santiago Peak Volcanics are represented throughout this area of San Diego County by outcrops of basalt and andesite. This formation contains a fine-grained, green metavolcanics known locally as felsite which was utilized by Native Americans for the manufacture of tools.

The project area also includes a variety of soils. The lower elevations consist of recent alluvial clays and sands indicative of a flood plain. The soil in the upper elevations consists of clay

mixed with pockets of bentonite and/or cobbles, the latter comprised mostly of granite, basalt, and quartzite. These lithic materials, generally hard and extremely resistant to erosion, were also utilized by the prehistoric human inhabitants of the San Diego region for the manufacture of flaked tools and grinding implements (Smith 1991, Robbins-Wade 1990).

2.1.2 Biological Environment

The biological setting of the project area is dominated by an agricultural vegetative community, with small pockets of native coastal sage scrub in the eastern portion of the project and along the steep slopes adjacent to some drainages. These communities are heavily dependent on the amount of precipitation that the area receives. The amount of seasonal precipitation is related to the major land forms that exist throughout the county. Coastal mesas, such as Otay Mesa to the south, receive an average of between 12 and 16 inches (30-40 centimeters) of rainfall annually, mostly between October and May (Beauchamp 1986). The project area also exhibits generally mild temperatures; however, several instances of winter frost, as well as some weeks in the summer with temperatures of over 100° Fahrenheit, are recorded annually. These environments tend to support a wide variety of wildlife, particularly birds and small mammals (Beauchamp 1986).

2.1.3 Current Land Use

The project area has been utilized for farming and grazing since the first land grants were made in the early 1800s. The eastern area within Otay Ranch is currently used for agricultural and ranching activities. The western portion of the pipeline project runs through developed areas of Chula Vista located along Otay Valley Road and Main Street.

2.2 Cultural Setting

The cultures that have been identified in the general vicinity of the project consist of the possible Paleo-Indian manifestation of the San Dieguito Complex, the Archaic La Jolla Complex, and the Late Prehistoric Kumeyaay culture. The area was used for ranching and farming following the Hispanic intrusion into the region, and extending into the historic period. A brief discussion of the cultural elements in the project area is provided in the following subsections.

2.2.1 Paleoenvironment

Because of the close relationship between prehistoric settlement and subsistence patterns and the environment, it is necessary to understand the setting in which these systems operated. At the end of the final period of glaciation, approximately 11,000 to 10,000 years before the present (YBP), the sea level was considerably lower than it is now; the coastline at that time would have been between two and two and one-half miles west of its present location (Smith and Moriarty 1985a, 1985b). At approximately 7,000 YBP, the sea level rose rapidly, filling in many coastal canyons that had been dry during the glacial period. The period between 7,000 and 4,000 YBP was characterized by conditions that were drier and warmer than previously, followed by a cooler,

moister environment, similar to the present-day climate (Robbins-Wade 1990). Changes in sea level and coastal topography are often manifested in archaeological sites in the types of shellfish that were utilized by prehistoric groups. Different species of shellfish prefer certain types of environments; dated sites that contain shellfish remains reflect the setting that was exploited by the prehistoric occupants.

Unfortunately, pollen studies have not been conducted for this area of San Diego; however, studies in other areas of southern California, such as Santa Barbara, indicate that the coastal plains supported a pine forest between approximately 12,000 and 8,000 YBP (Robbins-Wade 1990). After 8,000 YBP, this environment was replaced by more open habitats which supported oak and non-arboreal communities. The coastal sage scrub and chaparral environments of today appear to have become dominant after 2,200 YBP (Robbins-Wade 1990).

2.2.2 Prehistory

The San Dieguito Complex

The San Dieguito Complex were a group of people who occupied sites in this region between 10,000 and 8,000 YBP. They were related to or contemporaneous with the Paleo-Indian groups in the Great Basin area and the Midwest. The artifacts recovered from San Dieguito sites duplicate the typology attributed to the Western Pluvial Lakes Tradition (Moratto 1984; Davis et al. 1969). These artifacts generally consist of scrapers and scraper planes, choppers, and bifacially flaked knives, but few or no milling tools. The absence of grinding or milling stones suggests that cereal grains and nuts were not part of the subsistence pattern. Tools recovered from sites of the San Dieguito Complex and the general pattern of site locations indicate that they were a wandering, hunting and gathering society (Moriarty 1969; Rogers 1966).

The San Dieguito Complex is the least understood of the cultures that have inhabited San Diego County. This is due primarily to the fact that San Dieguito sites rarely contain stratigraphic information or datable material. There is a current controversy among researchers centering on the relationship of the San Dieguito and the subsequent cultural manifestation in the area, the La Jolla Complex. Firm evidence has not yet been discovered to indicate whether the San Dieguito "evolved" into the La Jolla Complex, if the La Jolla Complex moved into the area and assimilated the San Dieguito people, or if the San Dieguito retreated from the area because of environmental or cultural pressures. Very little evidence of the San Dieguito Complex has been identified within the project area. It is probable that environmental changes associated with climatic change affected the subsistence base of the San Dieguito Complex, resulting in their exodus from this area sometime before 9,000 YBP.

The La Jolla Complex

Approximately 9,000 to 8,500 YBP, a second major cultural tradition was established in the San Diego region, primarily along the coast. At that time, the shoreline was located farther west than it is currently, because the sea level was lower during the end of the last Ice Age.

Locally, this cultural tradition has been called the La Jolla Complex, and radiocarbon dates from sites attributed to this culture span a period of over 7,000 years in this region (between 9,000 and 2,000 YBP). The La Jolla Complex is best recognized for its pattern of shell middens, grinding tools closely associated with marine resources, and flexed burials (Shumway, Hubbs and Moriarty 1961; Smith and Moriarty 1985a, 1985b).

The tool typology of the La Jolla Complex displays a wide range of sophisticated lithic manufacturing techniques. Scrapers, the most common type of flaked tool recovered from La Jolla sites, were created by either splitting cobbles or finely flaking quarried material. La Jolla sites also contain large numbers of milling tools (manos and metates) and utilized flakes that appear to have been used to pry open shellfish (Smith and Moriarty 1985a, 1985b). Inland sites of the La Jolla Complex, sometimes called the Pauma Complex, were situated at a distance from marine food resources and generally lack marine-related refuse. But they do contain large quantities of milling tools and food bone, suggesting seasonal migration from the coast to the inland valleys (Smith 1986).

The Late Prehistoric Kumeyaay Indians

The last major migration into the coastal zone occurred approximately 1,500 YBP, when Yuman- and Shoshonean-speaking people moved from the Colorado River Basin to the coast in search of a more plentiful food supply (Moriarty 1969). This group is known locally as the Late Prehistoric Diegueño, or Kumeyaay, culture. Fortunately, ethnographic evidence is available from the period of the earliest Spanish contact to the late 1800s, providing a record of the nonmaterial aspects of these groups.

Sites associated with the Kumeyaay are focused in the foothills and mountains, rather than along the coast. Their subsistence pattern was based on the collection of seeds (especially acorns), berries, and bulbs, and the hunting of small game. Artifact collections from Late Prehistoric occupations include milling tools, ceramics, projectile points, scrapers, planes, beads, shaft straighteners, and hammerstones. Ethnographic information indicates that the culture of the Kumeyaay Indians consisted of a close clan system with definitive religious beliefs and complex trade associations with relatives living in the Colorado River Basin (Kroeber 1925).

The last phase of the Kumeyaay culture began approximately 400 YBP, with the first contact by Europeans (Juan Rodriguez Cabrillo, in 1542). By 1769, at the time of the first European settlement in San Diego, at least 20 permanent or semi-permanent villages had been established near the Pueblo of San Diego. These living sites were primarily coastal, although some were located in valleys that were a short distance inland. For the most part, villages were located close to a supply of fresh water and plant foods. Villages that depended on springs for their water supply were usually located some distance from them, so that the animals using them would not be driven off, and also to avoid the insects that frequented the surrounding marshy areas (Moriarty 1961). Historical accounts generally agree that a few villages were located along the bay side of Point Loma, and several were scattered along the shores of Mission Bay. Others were situated in

the present area of the City of San Diego and near the mouths of the major streams that emptied into San Diego Bay. Major river valleys, such as the San Diego River Valley, were well populated because of their resources of plant foods and water. Villages were also located in the La Jolla area, in Soledad Canyon, at the mouth of Rose Canyon, and in the inland valleys of the Otay Mesa, east of San Diego. A number of temporary shellfish-gathering and fishing sites were situated on the shores of bays and the ocean.

2.2.3 History

Exploration Period (1530-1769)

The historic period around San Diego Bay began with the landing of Juan Rodriguez Cabrillo and his men in 1542. Previous expeditions sent out by Hernando de Cortés, the conqueror of Mexico, had discovered the tip of Baja California in the early 1530s. Subsequent voyages at his direction gradually defined the Gulf of California by recording the shores of Baja California and the Mexican mainland. These discoveries directed attention to the coast of Alta California. Sixty years after the Cabrillo expeditions, an expedition under Sebastian Vizcaíno made an extensive and thorough exploration of the Pacific Coast. Although the voyage did not extend beyond the northern limits of the Cabrillo tract, Vizcaíno had the most lasting effect on the nomenclature of the coast. Many of the names he gave to places have survived, whereas practically every one of Cabrillo's has faded from use. Cabrillo's voyage gave cartographers the information that they needed to begin defining the western shores of the unknown land located north of Mexico. Subsequent voyages added details to Cabrillo's information that, in time, permitted the mapmakers to accurately depict the west coast. As the newer reports came in, the names that Cabrillo gave to various places were gradually supplanted. Because his voyage was the last one, Vizcaíno's names became fixed in the mapmakers' minds, and thus survived (Rolle 1969). Cabrillo gave the name of "San Miguel" to the first port at which he stopped in what is now the United States; 60 years later, Vizcaíno changed it to "San Diego" (Rolle 1969).

Spanish Period (1769-1821)

The Spanish occupation of the claimed territory of Alta California took place during the reign of King Carlos III of Spain. The powerful representative of the King in Mexico was Jose de Galvez, who conceived of the plan to colonize Alta California and thereby secure the area for the Spanish crown (Rolle 1969). The effort involved both a military and a religious contingent, with the overall intent of establishing forts and missions to gain control of the land and of the native inhabitants through conversion. Actual colonization of the San Diego area began on July 16, 1769, when the first Spanish exploring party, commanded by Gaspar de Portolá (with Father Junípero Serra in charge of religious conversion of the native populations), arrived in San Diego to secure California for the Spanish crown (Palou 1926). The natural attraction of the harbor at San Diego and the establishment of a military presence in the area solidified the importance of San Diego to the Spanish colonization of the region and the growth of the civilian population. Missions

were constructed from San Diego to as far north as San Francisco. The mission locations were based on a number of important territorial, military, and religious considerations. As an extension of territorial control by the Spanish empire, each mission was placed so as to command as much territory and as large a population as possible. The route of El Camino Real served as the primary channel within which to funnel transportation, commercial and military activities, and eventually railroads northward along the coast. This route was considered to be the most direct path between the missions (Rolle 1969). As increasing numbers of Spanish and Mexican people, and later Americans during the Gold Rush, settled in the area, the Indian populations diminished as they were displaced or decimated by disease (Carrico and Taylor 1983).

Mexican Period (1821-1846)

By 1821, Mexico had gained independence from Spain, and the northern territories were subject to political repercussions. By 1834, all of the mission lands had been removed from the control of the Franciscan Order, under the Acts of Secularization. Without proper maintenance, the missions quickly began to disintegrate, and after 1836, missionaries ceased to make regular visits inland (Engelhardt 1920). The mission lands were divided into smaller tracts, or ranchos, which were granted to persons who had gained favor with the Mexican government. The Salt Creek Sewer Project is located primarily in one such grants, Rancho Otay (Estudillo) (see Section 2.3.1 for a brief rancho history).

Anglo-American Period (1846-Present)

California was invaded by United States troops during the Mexican War of 1846-1848. The acquisition of strategic Pacific ports and California land was one of the United States' principal objectives of the war (Price 1967). At the time, the inhabitants of California were practically defenseless, and they quickly surrendered to the United States Navy in July 1847 (Bancroft 1886).

The cattle ranchers of the "counties" of southern California had prospered during the cattle boom of the early 1850s. They were able to "reap windfall profit...pay taxes and lawyer's bills...and generally live according to custom" (Pitt 1966). Cattle-raising soon declined, however, contributing to the expansion of agriculture. With the passage of the "No Fence Act," San Diego's economy changed from stock-raising to farming (Rolle 1969). The act allowed for the expansion of unfenced farms, which was crucial in an area where fencing material was practically unavailable. Five years after its passage, most of the farm lands in San Diego County had been patented, and growing grain crops replaced raising cattle in many of the county's inland valleys (Blick 1976; Elliott 1883 [1965]). By 1870, farmers had learned to dry-farm and were coping with some of the peculiarities of San Diego County's climate (*San Diego Union*, February 6, 1868; Van Dyke 1886). Between 1869 and 1871, the amount of cultivated acreage in the county rose from less than 5,000 acres to more than 20,000 (*San Diego Union*, January 2, 1872). Of course, droughts continued to hinder the development of agriculture (Crouch 1915; *San Diego Union*, November 10, 1870; Shipek 1977). Large-scale farming in San Diego County was limited

by a lack of water and the small size of farm valleys; also, the small urban population and poor roads restricted commercial crop growing. Nevertheless, cattle continued to be grazed in inland San Diego County. For example, in the Otay Mesa area, the "No Fence Act" had little effect, because ranches were still spaced far apart, and natural features helped keep the cattle out of growing crops (Gordinier 1966).

During the first two decades of the twentieth century, the population of San Diego County continued to grow. The population of the inland county declined during the 1890s, but between 1900 and 1910, it rose by about 70 percent. The pioneering efforts were over, the railroads had broken the relative isolation of southern California, and life in San Diego County became similar to other communities throughout the west. After World War I, the history of San Diego County was primarily determined by the growth of San Diego Bay. In 1919, the United States Navy decided to make the bay the home base for the Pacific Fleet (Pourade 1967). During the 1920s, the aircraft industry also established itself at the bay (Heiges 1976). The establishment of these industries led to the growth of the county as a whole; however, most of the growth occurred in the north county coastal areas, where the population almost tripled between 1920 and 1930. During this time, the history of inland San Diego County was subsidiary to that of the city of San Diego, which became a Navy center and industrial city (Heiges 1976). In inland San Diego County, agriculture became specialized, and recreational areas were established in the mountains and deserts. Just before World War II, urbanization began to spread to the inland county, including the area of eastern Chula Vista that contains the current study area.

2.3 History of the Salt Creek Sewer Project Area

The eastern portion of the project is located in Rancho Otay (Estudillo), which is located immediately south of Rancho La Nación. In 1829, the Otay and Janal ranchos were granted to a brother and sister of a prominent California family, the Estudillos (Moyer 1969). Don José Antonio Estudillo received the 4,436-acre Rancho Janal through a grant from California Governor José María Echeandía (according to Moyer, "janal" is an Indian word meaning "spongy ground"). His sister, Doña Magdalena Estudillo, was granted the 6,657-acre Rancho Otay by the same act ("Otay" is a Diegueño Indian word meaning "brushy" [Kroeber 1925]). In 1846, Governor Pío Pico reaffirmed this grant, possibly in an effort to reduce confirmation problems should the Americans come to power in California (Caughey 1970). The Rancho Janal and Rancho Otay were operated jointly for several years, although each had its own registered brand. Both ranchos were finally confirmed by the United States Land Office in 1872 (Patent Book 1, pp. 89-94 and 173-178, respectively), largely through the efforts of Don José's son, José G. Estudillo (Moyer 1969). Rancho Janal is often referred to as Rancho Otay (Domínguez) on early maps. This probably refers to Don José's widow and heir whose maiden name was Domínguez. This has led to some confusion among historians regarding the location of features and events that occurred on the two ranchos.

In 1880, Alexander Yoel sold Rancho Otay to J. & A. Fairchild (owners of Rancho La

Nación) for the sum of \$6,500 (San Diego Land and Town Company History Records, no date). In 1884, Marco Bruschi leased the rancho from the San Diego Land and Town Company for one year (*San Diego Union*, March 1, 1884). Bruschi sublet a portion of the rancho to Anticeto Eshenique for sheep grazing. What part of the rancho this involved is not clear, although Gloria Esterbloom (1960) mentions an "Etcheneques" family of sheep ranchers in Telegraph Canyon after 1908. These may be two variant spellings of the Basque surname "Echenique." Sometime later, a subdivision map for Rancho Otay was prepared and filed with the County of San Diego (Subdivision Map 862, 1898). Since Rancho Otay has not only remained intact, but grown by purchase through the years, it is apparent that this attempted subdivision met with little success.

Through the years, both ranchos have changed in terms of ownership and total acreage. For a time, John D. Spreckels, E. S. Babcock, and other financiers are said to have controlled both the Otay and Janal Ranchos (Moyer 1969). This data may refer to the creation of the Otay Lakes water storage system, which occupies land that was once part of Rancho Janal. The Southern California Mountain Water Company, started by E. S. Babcock and later led by John D. Spreckels, built the upper and lower Otay Dams on part of Babcock's Rancho Janal (Adams, no date). By 1926, the balance of Rancho Janal, except the Babcock residence, was sold to Henry Fenton and became the Fenton Ranch, and grazing gave way to growing barley and lima beans. The Babcock residential complex was previously used as hunting lodges for guests from Babcock's Hotel del Coronado, an enterprise with which John D. Spreckels also became associated.

In 1936, Stephen Birch of New Jersey purchased Rancho Otay from Rube Harris (Rush 1965). Later, Birch's heirs formed United Enterprises, Inc. Birch's daughter, Mary Patrick, and her husband occupied one of the three old Spreckels (Babcock) hunting lodges (Rojas 1991; Lansley 1993). Rancho Otay became known as the Otay Ranch, and its size was expanded to over 20,000 acres. Polled Herefords, Black Angus, and Santa Gertrudis cattle grazed there and carried the original rancho brand. Although stock raising was always a primary activity at the ranch, lima beans were a mainstay of farming activities until about 1950, when barley became the farming focus. In September of 1968, 3,150 acres of the ranch were sold for more than \$5 million to John Quinn and Albert Gersten for the purpose of residential and light industrial development, marking the beginning of major development activities in the area of the Salt Creek Sewer Project.

2.4 Previous Cultural Resource Studies

Numerous previous studies have taken place within the APE for the Salt Creek Sewer Project, and the entire length of the pipeline corridor has been surveyed. These studies have included all of Otay Ranch and the entire length of the Otay River floodplain. The list of previous studies has been presented in Table 2.4-1.

TABLE 2.4-1

**Previous Studies Conducted in the Area of
The Salt Creek Sewer Project**

- Advanced Sciences, Inc.
1991 "An Archaeological Impact Evaluation for the Otay River Valley Resource Enhancement Plan." Advanced Sciences, Inc. Report on file at the South Coastal Information Center, San Diego State University.
- Banks, Thomas J.
1980 "An Archaeological Survey of the Otay Ranch Proposed Barrow Pit Locations San Diego County." Report on file at the South Coastal Information Center, San Diego State University.
- Carrico, Richard and Theodore Cooley, et al.
1993 "Final Cultural Resources Evaluation of the 23,088-Acre Otay Ranch." Report on file at the San Diego Museum of Man.
- Carrico, Richard and Lesley C. Eckhardt
1978 "Cultural Resources Reconnaissance of the San Diego Fixed Guideway Project Center City to San Ysidro." WESTEC Services, Inc. Report on file at the South Coastal Information Center, San Diego State University.
- Carrillo, Charles and Charles Bull
1979 "Archaeological Investigation of the MTDB Fixed Guideway Project Route, Center City to San Ysidro." RECON. Report on file at the South Coastal Information Center, San Diego State University.
- Cheever, Dayle
1989 "Cultural Resources Survey of the H. G. Fenton Materials Company Property, City of Chula Vista, CA." RECON. Report on file at the South Coastal Information Center, San Diego State University.
- Cheever, Dayle and Dennis Gallegos
1988 "Cultural Resource Inventory of Hidden Trails, Otay Mesa, San Diego, California." WESTEC Services, Inc. Report on file at the South Coastal Information Center, San Diego State University.
- City of San Diego
1990 "Appendices for the Environmental Impact Report for the Otay Valley Reclamation Facility for the Clean Water Program for Greater San Diego." Report on file at the South Coastal Information Center, San Diego State University.
- Cook, John R.
1992a "Archaeological Testing and Significance Evaluation Program Report for the Dennerly Ranch Property, City of San Diego, California." ASM Affiliates. Report on file at the San Diego Museum of Man.
1992b Excerpt from: "Precise Plan, Vesting Tentative Map, Planned Residential Development Permit, Hillside Review Overlay Zone/Resource Protection Overlay Permit and Rezone

No. 88-0785." ASM Affiliates. Report on file at the San Diego Museum of Man.

Cooley, Theodore G.
1989 "Cultural Resource Testing of a Portion of the Janal/Fenton Ranch-Parcel #1, for KELCO, Division of Merck & Company." ERC Environmental and Energy. Report on file at the South Coastal Information Center, San Diego State University.

Corum, Joyce M.
1978 "An Archaeological Survey Report for the Proposed San Diego Bay Route Bikeway (Harbor Drive to Coronado) 112-12-185301." CALTRANS. Report on file at the South Coastal Information Center, San Diego State University.

County of San Diego
1983 "Supplemental Draft Environmental Impact Report Phase 2 of the Otay Mesa Land Use Plan GPA 84-01." Report on file at the South Coastal Information Center, San Diego State University.

Cultural Resource Management Center, SDSU
1985 "Final Report-Archaeological Test Excavations at CA-SDI-9980 and CA-SDI-9981 on the Proposed Otay Mesa State Prison Sewer Link, Rt. 5." CRM Center SDSU. Report on file at the South Coastal Information Center, San Diego State University.

Desautels, Roger
1980a "Archaeological/Paleontological Survey Report on Chula Vista Otay Valley Limited Industrial Project Located in Chula Vista Area of San Diego County." Scientific Resource Surveys, Inc. Report on file at the San Diego Museum of Man.

1980b "Archaeological/Paleontological/Historical Records Search and Report on the Chula Vista-Otay Valley Road Limited Industrial Project Located in Chula Vista Area of the County of San Diego." Scientific Resource Surveys, Inc. Report on file at the San Diego Museum of Man.

1984 "An Archaeological Survey of the Walker Scott Properties in Otay Valley, San Diego County, California." Scientific Resource Surveys, Inc. Report on file at the South Coastal Information Center, San Diego State University.

Douglas, Ronald
1980 "An Archaeological Records Search & Field Survey of the Janal Ranch Property, San Diego County, CA." Archaeological Planning Collaborative. Report on file at the San Diego Museum of Man.

ERCE
1991 "Otay River Bridge Replacement Cultural Resources Report, San Diego County." ERCE. Report on file at the South Coastal Information Center, San Diego State University.

Fink, Gary R.
1973 "Preliminary Archaeological Survey of the Proposed Youth Development Center, Otay, California." San Diego County Engineering Department. Report on file at the South Coastal Information Center, San Diego State University.

1974 "Further Archaeological Investigations of the Proposed Youth Development Center, Otay, California." San Diego County Engineering Department. Report on file at the

South Coastal Information Center, San Diego State University.

Fulmer, Scott and John Cook

- 1977 "Archaeological Survey of the Proposed South Bay Industrial Park, San Diego, California." ASM, Inc. Report on file at the South Coastal Information Center, San Diego State University.

Gallegos, Dennis

- 1989 "Cultural Resource Testing Program for Eastlake III, Chula Vista California." ERCE. Report on file at the South Coastal Information Center, San Diego State University.

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3.0 RESEARCH DESIGN

The archaeological study for the Salt Creek Sewer Project consisted of a testing program focused on the recordation of the resources, determining the presence or absence of a subsurface deposit, addressing the potential significance of subsurface deposits and features, and assessing the potential impacts of the project upon cultural resources.

In order to evaluate sites, various specific site characteristics needed to be examined, including the presence or absence of subsurface deposits. If such deposits are present, then their integrity, variability, age, and function must be assessed.

For the purpose of this study, the definitions of integrity, variability, age, and function are as follows:

Integrity: *Integrity is the degree to which a subsurface deposit remains intact and undisturbed. If the deposits have been disturbed, then the extent to which they retain information to address important research questions must be determined.*

Variability: *The variability of a deposit is indicated by differences in a site's stratigraphic pattern, which reflects changes that have occurred at the site through time. Greater differences between artifacts from different levels, whether in quantity, type, or cultural affiliation, signify more dynamic site variability and a greater possibility that the site offers an opportunity to address important research questions relating to human or environmental change or continuity through time.*

Age: *Age refers to the placement of a deposit in a particular time sequence, which is essential to the assignment of cultural affiliation and chronology. Age is generally determined by radiocarbon dating, although the recognition of index artifacts (i.e., artifacts that are time-sensitive or culture-specific) at a site can also provide a date. If obsidian is present at the site, hydration studies can furnish relative dates for a site.*

Function: *Function is the role that a particular site played in the overall subsistence pattern of a group of inhabitants of an area. Assuming that the artifacts recovered from a site represent the range of activities that took place there, its function in the subsistence pattern of the occupants can be defined.*

The analysis of an assemblage should provide evidence of site activities. When this information is compared to information from other sites in the area, research questions that focus on intersite relationships and catchment theories can be addressed.

* * *

The purpose of the proposed archaeological study is to determine if any sites will be impacted that are important as defined by CEQA. The information derived from the program will be utilized to advance local research issues. A research design for the study has been developed that presents a number of research questions and issues that may be pursued. The following research design includes questions which are commonly considered at sites similar to those present at the project; information derived from the proposed study may be potentially useful to local researchers.

The research design is focused on an attempt to reconstruct the way in which human occupants used the land and resources within the project area through time. As humans lived and died, evidence of their activities has been preserved on and in the ground. Archaeological methods are used to retrieve and analyze portions of this evidence to reconstruct past life ways. This type of inquiry is a part of the cultural resource management aspect of environmental impact studies.

This research design has been created exclusively for the proposed project, and it incorporates research questions based upon the current state of knowledge in both general anthropological and historical theory, and area-specific research concerns. As a prelude to archaeological data recovery, theoretical research hypotheses must be applied to the proposed program to ensure that the information recovered will address these important research concerns. The hypotheses contained herein are designed to be tested against the information gained through the archaeological data recovery process.

The research questions selected for the program are designed to address topics of demonstrated importance. These topics include cultural chronology, subsistence strategies/settlement patterns, cultural response(s) to environmental change, and trade considerations. In addition, the nature and extent of impacts to prehistoric resources are also considered. By designing field work to address these subjects of inquiry, the results of the archaeological program will be made more meaningful to both theoretical and substantive research concerns.

3.1 Research Topics

3.1.1 Previous Impacts

Different peoples have used the study area in different ways at different times in the past according to their levels of technological sophistication and cumulative cultural experience. Environmental changes occurred which not only affected the way in which prehistoric people used

the area, but also the preservation of the evidence of that use. Erosion and bioturbation are natural processes that can and have caused damage to archaeological deposits, some of which is irreversible. Modern impacts, such as grazing and cultivation, have also taken a toll on the remaining archaeological evidence. The identification of the nature and extent of impacts from these various agents has become an area of intense interest (O'Brien and Lewarch 1981; Erlandson 1984; Johnson 1989). As a result of this interest, it is now possible to reconstruct certain elements of impacted archaeological deposits.

Hypothesis 1: When prehistoric resources are identified as having been impacted by bioturbation, erosion, or cultivation, original distribution patterns can be reconstructed by attenuating impact patterns which have been identified by a variety of observations and short-term experiments.

Bioturbation is a process of soil mixing by a variety of natural agents such as insects, worms, coyotes, rabbits, gophers, ground squirrels, rats, mice, and other burrowing creatures. The term faunalturbation has been used by archaeologists to describe the activities of fossorial (burrowing) rodents (Erlandson 1984). The basis for some zonal distributions of archaeological materials in the subsurface environment stems from the habits of fossorial rodents, especially the gopher (*Thomomys sp.*). Previous studies have identified specific patterns created by faunalturbation in archaeological deposits.

Erlandson identified bimodal distribution patterns of artifacts in the subsurface environment as the result of fossorial rodents. Gopher burrowing activity provides a possible explanation for artifact zonation in cultural deposits where fossorial rodent activity is evident (Johnson 1989). The gopher biotope, for example, has been divided into specialized activity areas, particularly living and storage areas. These areas were identified from evidence in the walls of excavations coupled with statistical vertical zonation of manufactured artifacts. Several factors have been shown to influence the depth at which these activity areas may be found. Soil conditions such as layering and degree of compaction, grain size (including the presence of rock fragments), and the proximity of a bedrock layer beneath the soil are all factors which affect the range of vertical activities. The passage of time is also a factor in the faunalturbation of artifact deposits. Statistical analysis of the vertical distribution of artifacts may be useful in identifying the original zone of deposition as well as the fossorial activity levels at the sites.

Impacts from cultivation can cause distortion of the surface expression of archaeological resources (O'Brien and Lewarch 1981). Artifact transport resulting from cultivation activities is affected by the direction of plowing, the number of passes, and the size and shape of cultivator tools, the latter of which also determines the depth of impact. However, the basic result of cultivation activities is the transport of surface and near surface artifacts. These activities exert a greater effect on larger specimens and tend to leave smaller artifacts in place. In order to

determine, as accurately as possible, the original site boundaries as well as the nature and extent of plow zone artifact displacement, elements of the collection must be grouped according to size and plotted on separate distribution maps. Surface artifacts measuring less than one centimeter are then plotted by recovery location for each site. In like fashion, objects measuring larger than three centimeters are plotted by recovery location for each site. By eliminating all manufactured medium-size specimens and plotting larger and smaller artifacts separately, the resulting visual impact of patterning would be enhanced. Since the smallest specimens in O'Brien and Lewarch's study exhibited the least amount of displacement and the largest specimens exhibited the greatest displacement, these separate plots should approximate both the original area of deposition and the area of displacement, respectively.

3.1.2 Prehistory

Native American cultures have utilized a variety of environmental regimes in the study area for at least 7,000 years (Gallegos and Kyle 1990). These environments include open coast, bay, riparian woodland, salt marsh, mesa, and foothill zones (Beauchamp 1986). Evidence remaining from thousands of years of land use is limited to rocks and other resistant materials used and arranged by native peoples. More subtle evidence of past human activities include chemicals and other trace elements remaining in the soils and on the rocks. Thus, not only are the relative positions of all these artifacts of primary importance in reconstructing past activities, but microscopic traces of use add necessary detail to this aspect of scientific inquiry.

In looking for and identifying separate cultural horizons, it may be presumed either that different people occupied the area at different times, or that a group or groups changed enough through time such that they appear to be different in retrospect. A theoretical tripartite cultural sequence has been traditionally hypothesized for San Diego County (Moriarty 1966; Moratto 1984). This sequence includes the San Dieguito culture (oldest), followed by the La Jolla Complex, followed by the Late Prehistoric Luiseño Indians in northwestern San Diego County and the Diegueño (Kumeyaay) Indians in southern and eastern San Diego County. While substantial information has been gathered concerning Late Prehistoric inhabitants as a result of investigations of numerous well preserved sites and ethnographic accounts, earlier occupants of the area are more enigmatic due to a lack of preservation and ethnography. These earliest residents, and particularly their age and origin, have been the subject of much confusion.

The earliest cultural horizon in San Diego County, the San Dieguito Complex, was defined by its lithic artifact morphology, described by Malcolm Rogers (1939), Claude Warren (1966), and Emma Lou Davis et al. (1969); however, no absolute dates for the period of occupation were provided. There is some disagreement regarding the establishment of this period and precisely what kinds of artifacts and minerals are uniquely San Dieguito (Moriarty 1966; Warren 1966; Davis et al. 1969; Kowta 1969; Norwood 1986; Gallegos 1985; Smith and Moriarty 1985a).

Theoretically, following the period of the San Dieguito Complex, the intermediate period of human occupation of the area included a cultural group referred to as the La Jolla Complex. Both

coastal and near coastal manifestations of this complex were recognized by early researchers but were thought to represent different cultural entities separated in time (Warren et al. 1961; Warren and True 1961; Warren 1966; Warren 1968). This early confusion may be responsible, at least in part, for what has become a troublesome interpretive dilemma for modern researchers. Elements of the artifact assemblages, collectively included as part of the Paleo Coastal Tradition (PCT), bear recognizable similarities to assemblages of the Western Pluvial Lakes Tradition (WPLT) (Moratto 1984). The origins of the earliest coastal inhabitants (PCT) and their relatedness to desert cultures (WPLT) has therefore become not only a prominent local research issue, but one of regional importance.

Hypothesis 2: Differences in artifact assemblages identified by Rogers (Warren 1966) and others are the result of both developing technology (regional adaptation) through time, and morphological differences in assemblages resulting from specialized activities at environmentally different locations (Binford 1989).

The idea that technological changes in prehistoric archaeological lithic assemblages resulted from adaptations to changing environmental conditions has recently been a topic of debate in regional archaeology (Binford and O'Connell 1984; Flenniken 1984; Bamforth 1991). This concept, while not necessarily new, has been investigated in earnest only during the last twenty years or so. When addressing the problem of a San Dieguito antecedent to the La Jolla Complex, careful analysis of lithic tool morphology, absolute age, paleoenvironmental setting, and site function within a subsistence pattern must be undertaken. Fortunately, the two sites to be studied possess the potential to provide absolute dates through radiocarbon dating of shell recovered from the sites.

The identification of site function may be accomplished through a reconstruction of the paleoenvironment for the period in question (Pierson et al. 1987). Additionally, microscopic analyses of use wear on tools within a subject artifact assemblage can provide a sound basis for the identification of the range of activities undertaken at a given site (Keeley 1980). Trace analysis of residual chemicals on stone tools may be a necessary corollary to microwear analysis where the determination of site function is the interpretive goal (Yohe et al. 1991). Therefore, a combination of radiocarbon dating, paleoenvironmental reconstruction, microwear analysis, and trace chemical analysis are methods by which archaeologists may identify morphological, temporal, cultural, functional, and technological characteristics of a given collection (Rondeau 1992; Dahlstrom 1992).

3.1.3 Subsistence Strategies

Lewis Binford identified two basic prehistoric subsistence strategies, each of which resulted in a different settlement pattern (Binford 1980, 1989). These consist of

foraging—obtaining food and other resources as needed on an encounter basis—and hunting/gathering, involving a planned strategy to acquire resources from a specific areal range for both immediate consumption and storage. These differences are manifested in both site character and distribution patterns (Binford 1980; 1989)

Hypothesis 3: According to Binford, classifiable differences between hunter/gatherer and forager (collector) subsistence strategies resulted in distinct characteristics of archaeological remains. These two different subsistence strategies are represented in the project region—foraging by the Archaic La Jolla Complex, and hunting/gathering is represented by the Late Prehistoric Kumeyaay Indians.

The subsistence pattern resulting from a foraging subsistence strategy is quite different than that which results from hunting/gathering. The foraging pattern includes a seasonal camp, centrally located in a resource area (Binford 1989). The catchment area associated with such a camp typically would include the distance foragers could travel to collect resources and return the same day (Findlow and Ericson 1980). The resulting artifact distribution would include a dense assemblage at the central camp, representing the full range of objects and activities required to maintain the population for extended periods of time. Radiating from this central camp would be a decreasing spread of artifacts which represent only those devices needed to facilitate the collection of resources. Resources would have been transported back to the central location for processing and consumption by the group.

Hunter/gatherers established centrally located seasonal village complexes in a collecting area. Radiating from these central locations were maintenance camps that were strategically located near concentrated resources. Collecting and processing stations radiated from these maintenance camps and may represent both day use and overnight camping, depending on the volume and density of the resources present. Hunter/gatherers seek large quantities of storable resources in addition to maintenance resources for themselves (Binford 1980). The corresponding archaeological assemblages should consist of objects which reflect site function. Maintenance activities would be reflected by artifact assemblages where overnight camping occurred. For example, sites utilized only during daytime collection activities would not be expected to contain artifacts representative of clothing or adornment repairs.

3.1.4 Settlement Patterns

In seeking and identifying cultural remains, archaeologists have developed a number of land use models for prehistoric habitation and subsistence. One such model incorporates the identification of settlement patterns based upon the prehistoric distribution of resources. Sources of fresh water, food, and lithic materials suitable for tool making were essential to human existence. Refinements to this settlement pattern model add the factors of climate, geography,

quantity and variety of resources available, and seasonal resource distribution. These factors can affect the distribution and availability of resources. Therefore, models for settlement patterns may be constructed on the basis of prehistoric availability of resources (Jochim 1976) and tested by mapping archaeological sites according to age, type, and size, then comparing site distribution with the prehistoric distribution of resources.

Hypothesis 4: Site location and primary function can be predicted with a reasonable degree of confidence by taking into consideration the distribution of resources through time.

The climate in the study area is semi-arid, or Mediterranean, and the vegetation community consists of coastal sage scrub (Strahler 1973). Water resources are typically focused in drainages, and greater concentrations and longer presence of water are found in drainages located lower in the watershed (Beauchamp 1986). Rainfall occurs primarily in the winter months, and summers are dry and warm. Vegetative food resources tend to be more concentrated in the drainages, particularly oak trees that produce acorns, a primary prehistoric food resource. Animals migrate to the drainages almost daily, especially during the dry summer months (Beauchamp 1986).

Physical changes in the environment as a result of changing conditions can result in a variety of human responses. For instance, the formation of San Diego Bay about 3,000-5,000 years ago resulted in the conversion of the open coast environment to a large bay with major riverine salt marshes at the termini of the Sweetwater, Otay, and San Diego Rivers (Inman 1983; Masters, in Gallegos and Kyle 1988). This resulted in the creation of a larger, more varied, and more concentrated food resource base than the previous riverine zones and a more distant rocky foreshore strip. John Cook demonstrated the value of reconstructing paleoenvironmental characteristics such as elevation, proximity to necessary resources, and land forms to make predictions about settlement patterns (Cook 1980). It is important, therefore, to reconstruct the paleoenvironment when attempting to predict the distribution of very old site types.

Lithic resources were a necessary part of prehistoric subsistence. Commonly, lithic source areas have been identified as quarries and include both cobble and bedrock sources. Outcrops of Santiago Peak Volcanics may be observed at various places in the transition zone between the coastal mesas and the foothills of the western Peninsular Range (Kennedy and Tan 1977). In addition, sediment layers of varying coarseness are present within the coastal mesas. Coarse sediment layers are those made up primarily of cobbles and small boulders, and have been documented as lithic resources for prehistoric inhabitants of the coastal zone. These resources were necessary elements in the overall resource procurement scheme.

Trace and use-wear analyses are emerging as important adjuncts to archaeological studies. This area of inquiry can provide important information about the kinds of resources processed at a site (Yohe et al. 1991; Keeley 1980). These analyses may be used not only to identify foods and other materials processed at a site, but also to determine functional aspects of stone tools through the identification of characteristic microwear patterns and to establish paleoecology and site

function. Although not yet widely utilized, such special studies offer tremendous potential for archaeological interpretation.

3.1.5 Trade

Artifacts that indicate trade practices include exotic lithics (jasper, chert, soft stone, and obsidian), items of adornment (beads and other ornaments), and rare ceramic figurines (True 1957; Hedges 1973; Dixon 1977). Chert has traditionally been identified as a desert resource, although to date no definitive connection between local chert artifacts and specific desert sources has been established. Soft stone includes both imported soapstone and other talcose rocks (Rosenthal and Williams 1992) as well as locally available pyrophyllite (Johns and Lance 1950) and lepidolite (Weber 1963). Pyrophyllite and lepidolite are easily identified by their fibrous, crystalline structures and hardness of 2 to 3 on the Moh Scale. Obsidian has been found in archaeological context within the study zone. Obsidian sources located in the study area have been identified at Obsidian Butte in Imperial County and the Coso Range in the northern Mojave Desert (Dominici 1984; Robbins-Wade 1990).

Hypothesis 5: The presence of exotic materials (imported) is more indicative of trade as distance from the source increases.

The presence of some exotic materials in archaeological sites has been taken as an indication of trade during prehistoric times (Galdikas-Brindamour 1970). However, the majority of the exotic materials present in archaeological context within the study area may have been obtained directly (Lee 1937). Local and near-local materials such as marine shell, carvable stone, and even Obsidian Butte obsidian may have been obtained directly during prehistoric times as part of a seasonal migratory pattern (Lee 1937).

It is unlikely that exotic materials were directly acquired from greater distances (such as obsidian from the Coso Range in the northern Mojave Desert) by local people in prehistoric times. Coso obsidian has been found in many local archaeological sites and is not uncommon in sites associated with the La Jolla Complex (Dominici 1984; Smith and Moriarty 1985a). Furthermore, a variety of cryptocrystalline rocks (jasper, chert, chalcedony, etc.) believed to have originated from the Mojave Desert (Bamforth 1992) have been found in local prehistoric context. In fact, some Pinto Basin points made from these materials have been found in La Jolla Complex sites and are thought to have been imported after manufacture (Smith and Moriarty 1985a). While it appears that these Mojave Desert specimens were brought to the project area through trade activities, what is not known is whether they were carried by specialized individuals who traveled from area to area, or if the material was traded from group to group. In either case, the indications of a system of trade suggest some level of interaction among prehistoric California Indians. Such interaction would be necessary to move exotic materials across great distances.

4.0 METHODOLOGY

The archaeological program to evaluate the sites located within the APE of the Salt Creek Sewer Project was conducted by BFSa using research and testing methodology that conformed to City of Chula Vista archaeological/historical guidelines and project-specific requirements of the City Planning Department, and to statutory requirements of CEQA and subsequent legislation. Specific definitions for archaeological resource types used in this report are those established by the State Historic Preservation Officer (SHPO).

Data for the project was obtained using both archival and field research methods. Archival research consisted of record searches of archaeological site files at the San Diego Museum of Man and the South Coastal Information Center at San Diego State University. The archaeological record searches served two purposes: to identify any previously recorded archaeological sites within the subject property, and to determine the pattern of site types and the results of previous investigations in the vicinity.

4.1 Field Methodology

The field study consisted of an archaeological reconnaissance of the pipeline alignment to determine the current status of recorded archaeological sites within the APE as well as to search for any resources that had not been previously studied. Following the field check of sites, those resources within the 40-foot wide APE corridor were subjected to a testing program. The testing was comprised of surface collection, site mapping, shovel test pits, and test unit excavations of only those portions of sites situated within or near the APE corridor. The program was intended to define the physical boundaries of the sites within the APE, and the contents and characteristics of any subsurface deposits that might be affected by the pipeline excavation and associated site disturbance. As a result of the data collection program at the sites, the research potential, location, physical dimensions, and integrity of the individual sites could be determined.

4.1.1 Field Survey

The APE for the project had been previously surveyed by various archaeologists over the past 20 years, and therefore, an intense archaeological survey was not necessary for the current project. However, a field review of the pipeline corridor was necessary to review the status of the sites within the project and to review any areas with resource potential where previously unrecorded sites might be discovered. The intuitive reconnaissance of the corridor was performed by conducting on-foot surveys along the alignment at irregular intervals depending on the existing impacts and potential for resources.

4.1.2 Surface Collection

The records searches and field surveys identified 28 resources near or within the APE. Based upon site visits, 20 sites required significance testing. For this project, testing was limited to portions of the site within or near the APE. Prior to the initiation of the archaeological testing field work, a datum was established by triangulating an arbitrary location within the site. From this primary datum, all features, surface artifacts, and excavations within or near the APE were located, using range and azimuth readings. A 100% surface collection procedure was implemented for materials observed within the APE. Because all of the sites had been disturbed by historic or modern activities, such as cultivation, sand and gravel mining, grazing, or development, any artifacts that appeared to be clustered within a one-meter radius were collected as a group and mapped as a single location. The surface collection procedure consisted of mapping each recovery location, collecting the artifacts, and securing the artifacts in a container that was labeled with the provenience information. All of the recovered surface artifacts were returned to the consultant's laboratory for analysis.

4.1.3 Shovel Test Excavations

Shovel tests were excavated to locate any subsurface deposits. The shovel tests measured 30 centimeters wide and 50 centimeters long, and a minimum of 30 centimeters in depth. The excavations were continued to a depth that surpassed the level of recovery and included at least one level of sterile recovery. All soil was sifted through one-eighth-inch mesh hardware cloth, and all recovered artifacts were placed in containers labeled with the provenience information. The shovel tests were excavated in decimeter levels. The locations and number of shovel tests at the sites varied and will be noted in the individual sections that provide testing results for each site. All of the artifacts recovered from this testing procedure were returned to the consultant's laboratory for analysis.

4.1.4 Test Unit Excavations

Test unit excavations are used to provide qualitative and quantitative information concerning the subsurface content of a site. Standard test unit excavations were conducted at sites if the shovel tests indicated a subsurface deposit was present, or if the quantity of surface artifacts suggested the potential for a subsurface deposit was sufficient to warrant a test unit excavation. The numbers and locations of the units at each site varied; this information is provided in the section of this report that provides individual site results. Each test unit measured one meter square and was oriented to true north. Vertical control within the test units was maintained by excavating in decimeter levels, and all of the units were excavated to a culturally sterile level unless bedrock was encountered before that depth was achieved.

The units were excavated using the contour method. Hand tools were used, and all removed soil was sifted through one-eighth-inch mesh hardware cloth. All of the artifacts recovered from the unit levels were placed in containers, labeled with the provenience information,

and returned to the consultant's laboratory for analysis. Unit level record sheets, describing the soil types revealed and the materials recovered, were completed after the excavation of each test unit level. At the completion of the excavations, the test units were photographed, sketched, and then backfilled. The data obtained from the test units was subsequently subjected to both standard and specialized analysis to test the hypotheses set forth in the research design.

4.2 Laboratory Methods

The laboratory methods used to study the materials recovered from sites within the project generally consisted of basic procedures, since the recoveries from the sites were primarily lithic production waste. All collected artifacts were cataloged, analyzed, and prepared for permanent storage.

4.2.1 Artifact Analysis

All of the artifacts recovered from the project were identified and cataloged, in keeping with generally accepted archaeological procedures. In addition, selected artifacts were washed and further analyzed. Washing of artifacts was minimized to preserve any possible organic substances that might remain on the lithic artifacts. Washing was used primarily to provide sufficient clarity to permit proper artifact identification and analysis of use wear. After identification, the artifact materials were repackaged for storage.

The cataloging process used to categorize the recovered lithic materials was based on a classification system commonly used in this region. As was noted previously, the definitions for some of the artifact types were taken from the OHP publication, *California Archaeological Resource Identification and Data Acquisition Program: Sparse Lithic Scatters* (1988).

4.2.2 Ecofact Analyses

Faunal Analysis

No faunal material was observed within any of the sites studied.

Marine Shell Analysis

Small quantities of shell were recovered from two sites within the study. All identifiable shell was classified to the generic (genus) level using the comparative collection at the laboratory of BFSA, as well as shell identification source books by Morris (1966) and Reish (1972). Shell was weighed by species but not counted.

5.0 SITE TESTING RESULTS

The testing program conducted for the Salt Creek Sewer Project involved some level of fieldwork at 20 sites. The listing of sites within the APE and those that were tested is provided in Table 5.0-1. Each of the sites that were tested are described in Sections 5.1 through 5.20. Each site report will include description of the site setting, level of effort, test results, maps, graphics as necessary, and significance evaluations. The locations of each of the sites within the Salt Creek Sewer APE is illustrated on Figure 5.0-1.

TABLE 5.0-1

Cultural Resources Within the Salt Creek Sewer APE

<u>Site</u>	<u>Status</u>	<u>Report Section</u>
SDI-4732	Tested	5.1
SDI-4738	Tested	5.2
SDI-7217B	Tested	5.3
SDI-8065	Previously Tested, Disturbed	
SDI-8912	Previously Tested, Disturbed	
SDI-11,145	Previously Tested	
SDI-11,146	Previously Tested	
SDI-11,362	Not Tested, Disturbed	
SDI-11,364	Tested	5.4
SDI-11,374	Tested	5.5
SDI-11,378	Tested	5.6
SDI-11,962	Not Tested, Disturbed	
SDI-11,963	Not Tested, Disturbed	
SDI-12,278	Tested	5.7
SDI-12,288	Tested	5.8
SDI-12,291	Tested	5.9
SDI-12,293	Tested	5.10
SDI-12,809	Tested	5.11
SDI-14,203	Not Tested, Disturbed	
SDI-14,204	Tested	5.12
SDI-14,208	Tested	5.13
SDI-14,211	Tested	5.14
SDI-14,218	Tested	5.15
SDI-14,220	Tested	5.16
SDI-14,221	Tested	5.17
SDI-14,225	Tested	5.18
SDI-14,233	Tested	5.19
SDI-14,229	Tested	5.20

Four of the 28 sites within or adjacent to the APE were not tested due to the extent of modern impacts. These sites are designated in Table 5.0-1 as "Not Tested, Disturbed." The four recorded sites that were not tested are essentially located in areas which have been graded and developed. No indications of any cultural materials were observed at the locations of these four

sites, and testing was not necessary to determine that the sites did not possess any research potential that might have been a source of consideration of importance. No further archaeological studies are necessary to determine that these four sites are not significant.

Four sites located just west of Otay Ranch, along Otay Valley Road, were previously tested by BFSa for the Otay Valley Road Widening Project (Smith 1989). The testing program in 1989 provided sufficient data to determine that these sites, SDI-8065, SDI-8912, SDI-11,145 and SDI-11,146, were not important resources. These sites will not likely be impacted by the construction of the pipeline in Otay Valley Road, as they are situated on a terrace above Otay Valley Road or were destroyed by the construction of the auto dealerships east of Interstate 805 and south of Otay Valley Road. No further archaeological study will be needed for these four sites to conclude that the project will not represent a significant impact to the resources.

Figure 5.0-1

Cultural Resource Location Map

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Bound Separately in Confidential Appendix)**

5.1 SITE SDI-4732

5.1.1 Site Description

Site SDI-4732 is a prehistoric site located at the confluence of Salt Creek Canyon and Otay Valley. Site SDI-4732 lies on a slope adjacent to the east of Salt Creek. The site was recorded as a lithic scatter. The steeper slopes of the site are covered in coastal sage vegetation, while the moderate slopes adjacent to the creek have been disked in the past, and cattle have grazed extensively on introduced grasses. The setting of the site is shown in a photograph of the site area provided in Plate 5.1-1. A dirt road, which has disturbed the site, passes through the site parallel to Salt Creek. The general location of this resource is shown in Figure 5.0-1. Site SDI-4732 consists of a surface scatter of lithic artifacts with a sparse subsurface deposit.

The testing program at SDI-4732 consisted of the mapping and recovery of surface artifacts, and the excavation of 14 shovel tests and one test unit. Testing methods and unit sizes were consistent with those discussed in the methodology section (Section 4.0). The field investigations at this site were conducted in August, 2000. All artifacts recovered during the field investigations were subjected to the laboratory analysis procedures described in Section 4.2 of this report.

5.1.2 Description of Field Investigations

The field investigations at SDI-4732 were conducted using the standard methodologies described in Section 4.1. The site was disturbed by agricultural and grazing activities over the past 100 years, as well as the grading of a dirt road through the west side of the site. The APE for the project passes through the western most side of SDI-4732, and all field investigations were focused on the general area of potential impact.

Surface Mapping, Recording, and Collection

The locations from which surface artifacts were recovered at SDI-4732 are shown in Figure 5.1-1. The locations of the surface artifacts were recorded to establish the boundaries of the site within the APE. Based upon the surface recovery data, the area of the site within the APE measures approximately 140 feet (43 meters) from northwest to southeast and 30 feet (nine meters) from southwest to northeast, covering an area of approximately 4,200 square feet (387 square meters). The total dimensions of the site were not established as part of this study. The surface collection is detailed in Table 5.1-1. The three surface locations at SDI-4732 yielded a total of four flakes.

Subsurface Excavations

The potential for the existence of subsurface deposits at SDI-4732 was investigated with the excavation of a series of 14 shovel tests. The locations of the tests are shown in Figure 5.1-1. All of these tests were excavated to a minimum depth of 30 centimeters, unless compacted,

culturally sterile soil or bedrock was encountered. Of the 14 shovel tests excavated, two were positive (yielded cultural materials). The shovel test excavations, detailed in Table 5.1-2, resulted in the recovery of one flake and two pieces of debitage. The maximum depth of artifact recovery was 20 to 30 centimeters in Shovel Test 10. The two positive shovel tests indicated that the potential exists for subsurface deposits within the APE at SDI-4732.

To further test for a subsurface component of the site, one standard test unit was also excavated. The locations of the unit is shown in Figure 5.1-1. The test unit was excavated to a depth of 60 centimeters, with artifacts recovered to a depth of 50 centimeters. A total of 32 artifacts were recovered from the test unit, including 17 debitage and 15 flakes. The results of the test unit excavation have been summarized in Table 5.1-3 and detailed in Table 5.1-4. The test unit was excavated through very consolidated, rocky soil. A view of the test unit is provided in Plate 5.1-1.

5.1.3 Laboratory Analysis

The laboratory analysis for SDI-4732 included the standard procedures described in Section 4.2 of this report. All of the artifacts recovered from the field investigations conducted at the site were returned to the laboratory to be cleaned as necessary, cataloged, and analyzed. The total collection of cultural materials from SDI-4732, summarized by provenience in Table 5.1-5, consisted of 39 specimens of lithic production waste. No tools or ecofacts were recovered from the site. The analyses which were conducted on the artifacts from Site SDI-4732 is discussed in the following sections.

Lithic Analysis

The collection of 39 lithic artifacts was entirely lithic production waste. The lithic material distribution of the recovery from the site consisted of 19 specimens of fine-grained metavolcanics and 20 specimens of medium-grained metavolcanics. All lithic material types recovered from SDI-4732 are present in the vicinity of the site, confirming that the occupants of this site primarily used locally available sources for lithic production.

5.1.4 Discussion

The testing of SDI-4732 demonstrated that the surface expression of lithic artifacts was accompanied by a sparse subsurface deposit. This deposit encompasses an area of approximately 250 square feet (23 square meters) within the APE and reaching a maximum depth of 50 centimeters. The assessment of the site according to the criteria listed in Section 3.0 (integrity, variability, age, and function) is provided below:

Integrity: SDI-4732 is characterized as a surface scatter of cultural materials with an associated sparse subsurface deposit. The site area within the pipeline APE has been disturbed by agricultural use and a dirt road that passes through the

site. The previous impacts have significantly affected the site's integrity by disturbing the horizontal and vertical association of artifacts. Therefore, its integrity is poor.

Variability: The variability of a site consists of the horizontal and vertical separation of cultural materials that represent spatial, temporal, or cultural distinctions. The small quantity of cultural materials, the lack of a substantial subsurface deposit, and the disturbance within the APE, indicate that within the pipeline construction corridor, the site does not exhibit a high degree of variability.

Age: The age or cultural affiliation of SDI-4732 could not be satisfactorily determined on the basis of the data collected; no culturally diagnostic artifacts were recovered.

Function: The artifacts recovered from SDI-4732 are indicative of a temporary camp used to process food materials and to manufacture and maintain lithic tools. The function of this site is much the same as the majority of small sites situated along Salt Creek and the Otay River.

5.1.5 Summary

The testing of SDI-4732 demonstrated that this site consisted of a sparse surface expression of lithic artifacts with a sparse subsurface deposit. The site area within the APE has produced artifacts that indicate the pipeline will pass through a prehistoric temporary camp that is associated with the subsistence pattern of either the Archaic (inland La Jolla Complex) or Late Prehistoric (Kumeyaay Indians) occupations of the area.

5.1.6 Evaluation

The field and laboratory studies conducted for Site SDI-4732 characterize the site as a surface scatter of cultural materials with a sparse subsurface deposit. The artifact collection indicates that the site was used primarily as a resource extraction site where site activities included the procurement and processing of food resources, as well as lithic tool production. The lack of a deep midden, hearth features, and other evidence of extended site occupation suggests that the site was not a permanent camp.

Based on the information derived from the testing program, the site area within the APE is not considered important according to CEQA criteria. Portions of the site located east of the APE may include important components of the site; however, investigations were generally limited to the area in or adjacent to the APE.

5.1.7 Impact Assessment

Site SDI-4732 was tested because the alignment for the pipeline is tentatively designed to pass within the site boundaries. The pipeline trench is currently designed to stay within the dirt

road that passes through the site. Assuming that the trench is kept within the road and associated construction activities will be limited to an area not exceeding 20 feet on either side of the road, then the potential impacts to SDI-4732 will be minimal. Because the portion of SDI-4732 within the APE was evaluated as not important, the impacts to the site within the APE will not be significant.

5.1.8 Native American Heritage Values

The Native American community was not contacted with regard to this site, as no archaeological materials or remains of special heritage sensitivity to the Native American community were identified at SDI-4732.

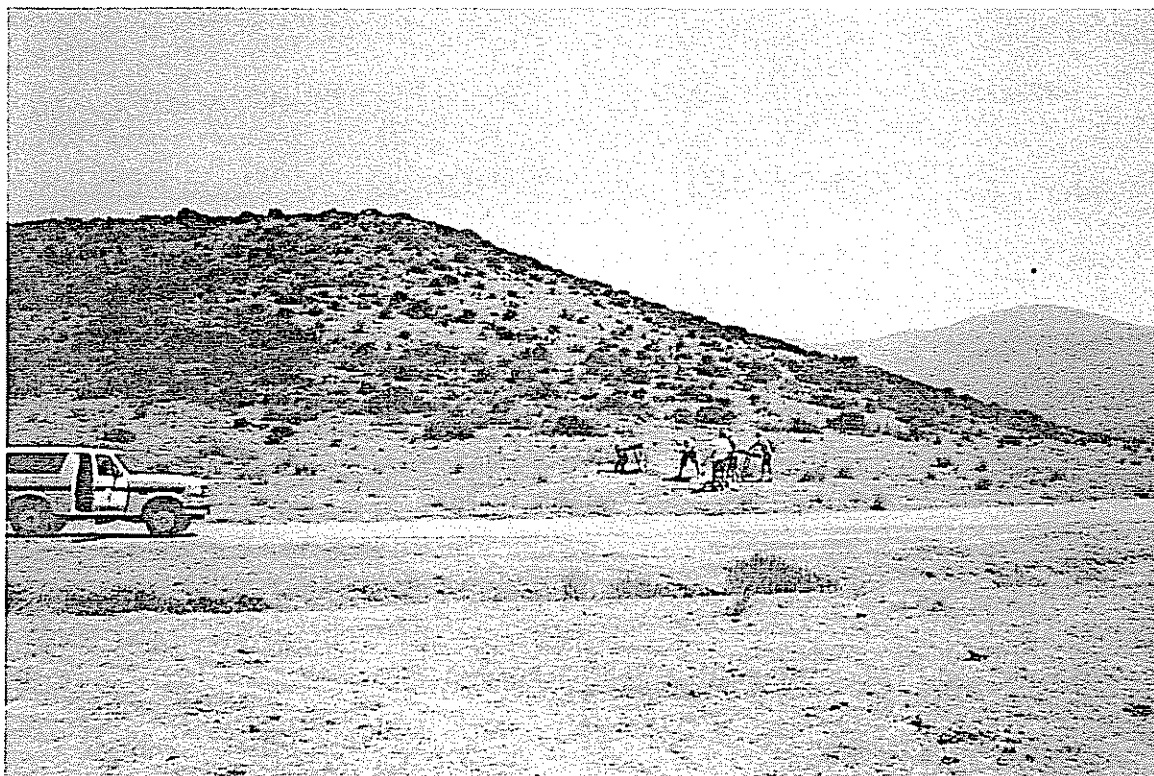
5.1.9 Mitigation Measures

The pipeline construction will impact this site, but no mitigation measures for direct impacts will be necessary. The portion of Site SDI-4732 within the APE has been determined to be not significant. Therefore, no mitigation measures will be required to reduce the significance of construction impacts. However, because of the potential for elements of the site to be masked or buried within the APE, monitoring of the trench excavation will be necessary. Also, because of the potential for significant components of the site outside of the APE, construction activities must be contained to the APE, and the archaeological monitor will be required to ensure that construction activities will not intrude into any untested portions of SDI-4732.

Figure 5.1-1

Excavation Location Map — SDI-4732

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View of Site SDI-4732, looking east.

Test Unit 1, 0 to 60 centimeters, SDI-4732.

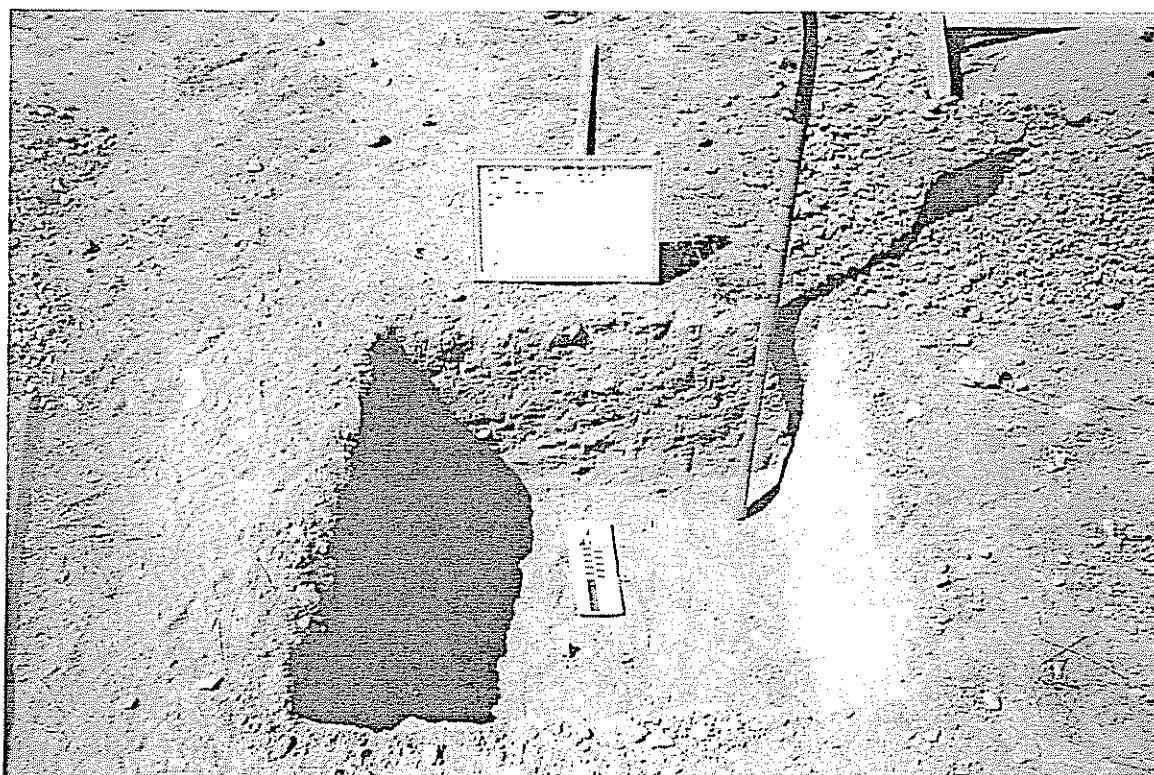


Plate 5.1-1

TABLE 5.1-1Surface Recovery Data
Site SDI-4732

Recovery Location	Location from Datum A Azimuth/Range	Quantity	Recovery	Material	Cat. No.
1	112°/42 Feet	1	Flake	FGM*	1
		1	Flake	MGM**	2
2	355°/44 Feet	1	Flake	MGM	3
3	160°/47 Feet	1	Flake	MGM	4

*FGM=*Fine-Grained Metavolcanic***MGM=*Medium-Grained Metavolcanic*

TABLE 5.1-2Shovel Test Excavation Data
Site SDI-4732

Shovel Test	Location from Datum A Azimuth/Range	Depth	Quantity	Recovery	Material	Cat. No.
1	142°/125 Feet	0-10 cm.		No Recovery		5
		10-20 cm.		No Recovery		6
		20-30 cm.		No Recovery		7
2	141°/78 Feet	0-10 cm.	2	Debitage	MGM*	8
		10-20 cm.		No Recovery		9
		20-30 cm.		No Recovery		10
		30-40 cm.		No Recovery		11
3	109°/40 Feet	0-10 cm.		No Recovery		12
		10-20 cm.		No Recovery		13
		20-30 cm.		No Recovery		14
4	32°/27 Feet	0-10 cm.		No Recovery		15
		10-20 cm.		No Recovery		16
		20-30 cm.		No Recovery		17
5	0°/68 Feet	0-10 cm.		No Recovery		18
		10-20 cm.		No Recovery		19
		20-30 cm.		No Recovery		20
6	345°/98 Feet	0-10 cm.		No Recovery		21
		10-20 cm.		No Recovery		22
		20-30 cm.		No Recovery		23
7	132°/82 Feet	0-10 cm.		No Recovery		24
		10-20 cm.		No Recovery		25
		20-30 cm.		No Recovery		26

*MGM=Medium-Grained Metavolcanic

Shovel Test	Location from Datum A Azimuth/Range	Depth	Quantity	Recovery	Material	Cat. No.
8	145°/90 Feet	0-10 cm.		No Recovery		27
		10-20 cm.		No Recovery		28
		20-30 cm.		No Recovery		29
9	150°/79 Feet	0-10 cm.		No Recovery		30
		10-20 cm.		No Recovery		31
		20-30 cm.		No Recovery		32
10	141°/66 Feet	0-10 cm.		No Recovery		33
		10-20 cm.		No Recovery		34
		20-30 cm.	1	Flake	FGM**	35
		30-40 cm.		No Recovery		36
11	251°/40 Feet	0-10 cm.		No Recovery		37
		10-20 cm.		No Recovery		38
		20-30 cm.		No Recovery		39
12	212°/45 Feet	0-10 cm.		No Recovery		40
		10-20 cm.		No Recovery		41
		20-30 cm.		No Recovery		42
13	178°/81 Feet	0-10 cm.		No Recovery		43
		10-20 cm.		No Recovery		44
		20-30 cm.		No Recovery		45
14	164°/142 Feet	0-10 cm.		No Recovery		46
		10-20 cm.		No Recovery		47
		20-30 cm.		No Recovery		48

**Fine-Grained Metavolcanic

TABLE 5.1-3Summary of Test Unit Recovery
Site SDI-4732

Artifact Category	Depth (in centimeters)					Total	Percent
	0-10	10-20	20-30	30-40	40-50		
Lithic Production Waste:							
Debitage	1	2	3	8	3	17	53.12
Flakes	-	1	2	9	3	15	46.88
Totals	1	3	5	17	6	32	100.00
Percent	3.12	9.38	15.62	53.12	18.75	100.00	

TABLE 5.1-4Test Unit Excavation Data
Site SDI-4732

Test Unit	Location from Datum A Azimuth/Range	Depth	Quantity	Recovery	Material	Cat. No.
1	142°/71 Feet	0-10 cm.	1	Debitage	MGM*	49
		10-20 cm.	2	Debitage	MGM	50
			1	Flake	MGM	51
		20-30 cm.	1	Debitage	FGM**	52
			2	Flakes	FGM	53
			2	Debitage	MGM	54
		30-40 cm.	8	Debitage	FGM	55
			5	Flakes	FGM	56
			4	Flakes	MGM	57
		40-50 cm.	1	Debitage	FGM	58
			2	Debitage	MGM	59
			3	Flakes	MGM	60
		50-60 cm.		No Recovery		61

*MGM=Medium-Grained Metavolcanic

**FGM-Fine-Grained Metavolcanic

5.2 SITE SDI-4738

5.2.1 Site Description

Site SDI-4738 is a prehistoric site located east of the mouth of Wolf Canyon. Site SDI-4738 lies on a hilltop and associated slopes to the east of the Wolf Canyon drainage. The site lies immediately west of the Rock Mountain Quarry. The slopes of the site are covered in sparse coastal sage vegetation, and it appears that the site has been disked in the past and grazing has taken place at times in the 100-year agricultural use of the Otay Ranch. The setting of the site is shown in a photograph of the site area provided in Plate 5.2-1. A dirt road, which represents the proposed location of the pipeline to be placed up Wolf Canyon, passes along the west and south sides of the site. The general location of this resource is shown in Figure 5.0-1. According to the site record form, Site SDI-4738 consists of a surface scatter of lithic artifacts; however, within the APE, no surface artifacts could be located, mostly likely due to previous impacts associated with the quarry roads that pass by the site.

The testing program at SDI-4738 consisted of the mapping of the site area and the excavation of 15 shovel tests. Testing methods and unit sizes were consistent with those discussed in the methodology section (Section 4.0). The field investigations at this site were conducted in August, 2000.

5.2.2 Description of Field Investigations

The field investigations at SDI-4738 were conducted using the standard methodologies described in Section 4.1. The site was disturbed by agricultural and grazing activities over the past 100 years, as well as the grading of a dirt road through the west and south sides of the site. The APE for the project passes along the western most side of SDI-4738, and all field investigations were focused on the general area of potential impact.

Surface Mapping, Recording, and Collection

While surface artifacts were observed just outside of the APE, no artifacts could be located within the APE. Certainly, the APE passes through a portion of the site that would be expected to include artifacts associated with the occupation of the site; however, previous impacts appear to have scraped or disturbed the lower slopes around the hilltop where the site is focused, and these impacts have removed evidence of the prehistoric use of the site. No surface artifacts were identified within the APE.

Subsurface Excavations

The potential for the existence of subsurface deposits at SDI-4738 was investigated with the excavation of a series of 15 shovel tests. The locations of the tests are shown in Figure 5.2-1. All of these tests were excavated to a minimum depth of 30 centimeters, unless compacted, culturally sterile soil or bedrock was encountered. Of the 15 shovel tests excavated, none yielded

any artifacts or evidence of a subsurface deposit within the site. The excavation data for the shovel tests is provided in Table 5.2-1. Because the shovel tests did not reveal any evidence of a subsurface component at the site, a test unit was not excavated as part of the significance analysis.

5.2.3 Laboratory Analysis

The laboratory analysis for SDI-4738 was not necessary, as no artifacts were recovered during the field investigation.

5.2.4 Discussion

The testing of SDI-4738 demonstrated that the portion of the site that was located within the APE has been intensely disturbed some time in the past, and no evidence of any prehistoric materials remains within the APE. The assessment of the site according to the criteria listed in Section 3.0 (integrity, variability, age, and function) is provided below:

Integrity: Within the APE, SDI-4738 is characterized as a very disturbed resource. Impacts to the site have removed all evidence of the prehistoric use of the site. Therefore, its integrity is poor.

Variability: Within the APE, no cultural materials were observed, and therefore, the site does not exhibit a high degree of variability.

Age: The age or cultural affiliation of SDI-4738 could not be satisfactorily determined on the basis of the data collected; no culturally diagnostic artifacts were recovered.

Function: The data recorded in the site forms combined with observations at SDI-4738 suggest the site was a temporary camp used to process food materials and to manufacture and maintain lithic tools. The function of this site is much the same as the majority of small sites situated along Salt Creek and the Otay River.

5.2.5 Summary

The testing of SDI-4738 demonstrated that this site no longer exists within the APE. The site itself was a prehistoric temporary camp that is associated with the subsistence pattern of either the Archaic (inland La Jolla Complex) or Late Prehistoric (Kumeyaay Indians) occupations of the area.

5.2.6 Evaluation

The field study conducted for Site SDI-4738 characterizes the site as a very disturbed resource. Based on the information derived from the testing program, the site area within the APE is not considered important according to CEQA criteria. Portions of the site located east of the

APE may include important components of the site; however, investigations were generally limited to the area in or adjacent to the APE.

5.2.7 Impact Assessment

Site SDI-4738 was tested because the alignment for the Wolf Canyon segment of the Salt Creek Sewer Project is tentatively designed to pass along the west side of the site. The pipeline trench is currently designed to stay within the dirt road that passes on the west side the site. Assuming that the trench is kept within the road and associated construction activities will be limited to an area not exceeding 20 feet on either side of the road, then the potential impacts to SDI-4738 will be minimal. Because the portion of SDI-4738 within the APE was evaluated as not important, the impacts to the site within the APE will not be significant.

5.2.8 Native American Heritage Values

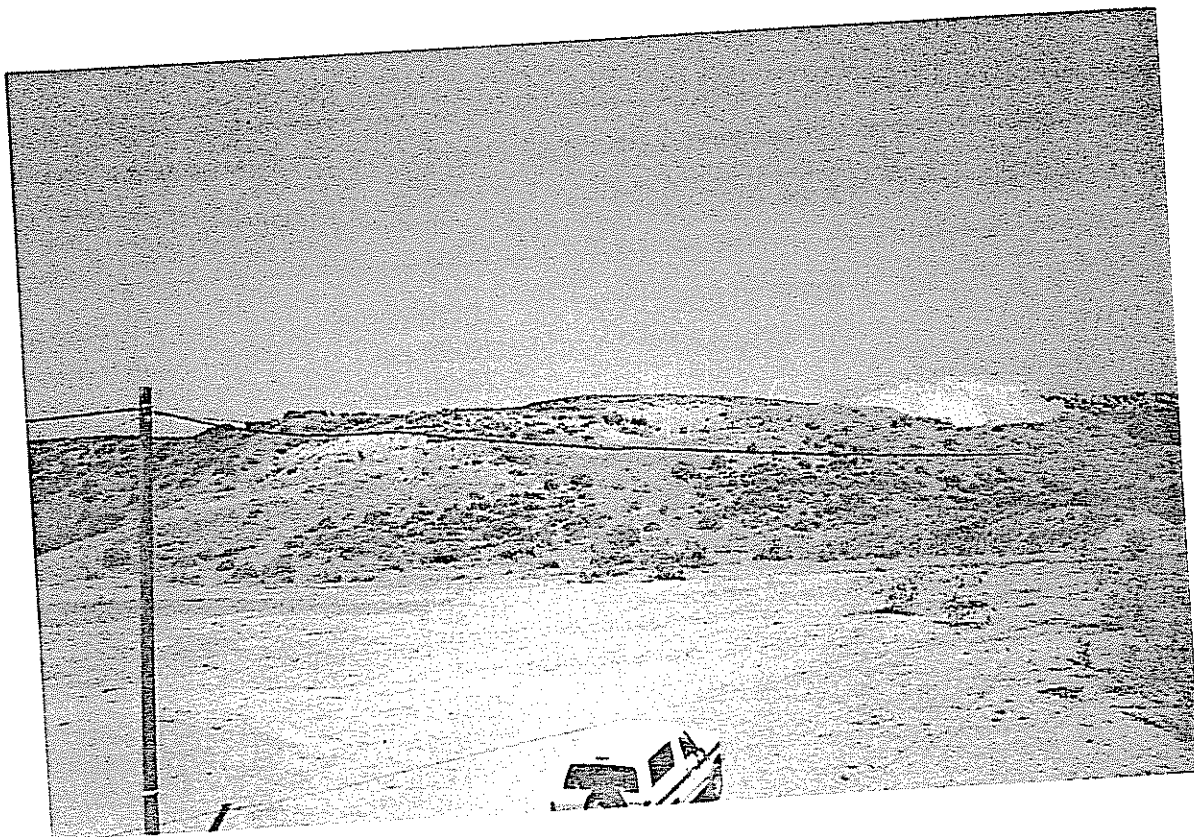
The Native American community was not contacted with regard to this site, as no archaeological materials or remains of special heritage sensitivity to the Native American community were identified at SDI-4738.

5.2.9 Mitigation Measures

The pipeline construction will impact this site, but no mitigation measures for direct impacts will be necessary. The portion of Site SDI-4738 within the APE has been determined to be not significant. Therefore, no mitigation measures will be required to reduce the significance of construction impacts. However, because of the potential for elements of the site to be masked or buried within the APE, monitoring of the trench excavation will be necessary. Also, because of the potential for significant components of the site outside of the APE, construction activities must be contained to the APE, and the archaeological monitor will be required to ensure that construction activities will not intrude into any untested portions of SDI-4738.

Figure 5.2-1
Excavation Location Map — SDI-4738

**(Deleted for Public Review;
Bound Separately in Confidential Appendix)**



View of Site SDI-4738, looking east.

TABLE 5.2-1

Shovel Test Excavation Data
Site SDI-4738

Shovel Test	Location from Datum A Azimuth/Range	Depth	Recovery
1	103°/130 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
2	90°/106 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
3	80°/84 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
4	60°/79 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
5	35°/102 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
6	28°/122 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
7	18°/153 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
8	12°/185 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
9	5°/225 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
10	6°/265 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery

Shovel Test	Location from Datum A Azimuth/Range	Depth	Recovery
11	5°/298 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
12	6°/316 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
13	6°/351 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
14	7°/377 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
15	5°/426 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery

5.3 SITE SDI-7217B

5.3.1 Site Description

Site SDI-7217B is a prehistoric site located along the Salt Creek drainage north of Otay Valley. The site lies on the east and west slopes that confine the path of Salt Creek. This site has been intensely impacted over time, and the existing vegetation is generally representative of disturbed landscape. Some small pockets of coastal sage scrub have either survived or managed to become reestablished. The setting of the site is shown in photographs of the site area provided in Plate 5.3-1. A dirt road, which has disturbed the site, passes through the site parallel to Salt Creek. Other impacts include pipelines and an easement road for the San Diego County Water Authority aqueduct. The site area has also been disked and used for grazing in the past. The general location of this resource is shown in Figure 5.0-1. Site SDI-7217B consists of a sparse surface scatter of lithic artifacts without any indication of a subsurface deposit.

The testing program at SDI-7217B consisted of the mapping and recovery of surface artifacts, and the excavation of 11 shovel tests. Testing methods and unit sizes were consistent with those discussed in the methodology section (Section 4.0). The field investigations at this site were conducted in August, 2000. All artifacts recovered during the field investigations were subjected to the laboratory analysis procedures described in Section 4.2 of this report.

5.3.2 Description of Field Investigations

The field investigations at SDI-7217B were conducted using the standard methodologies described in Section 4.1. The site was disturbed by agricultural and grazing activities over the past 100 years, as well as the installation of the San Diego Aqueduct and associated roads. The APE for the project passes through the center most side of SDI-7217B, and all field investigations were focused on the general area of potential impact.

Surface Mapping, Recording, and Collection

The locations from which surface artifacts were recovered at SDI-7217B are shown in Figure 5.3-1. While previous researchers of the site have indicated that the scatter of artifacts at SDI-7217B extended for a large area around Salt Creek, the field program conducted within the APE resulted in the recovery of only one artifact (Table 5.3-1). The previous impacts to the site have undoubtedly caused extensive disturbance to the resource and very likely removed or covered artifacts associated with the site. The surface collection included a single basalt (medium-grained metavolcanic) flake.

Subsurface Excavations

The potential for the existence of subsurface deposits at SDI-7217B was investigated with the excavation of a series of 11 shovel tests. The locations of the tests are shown in Figure 5.3-1. All of these tests were excavated to a minimum depth of 30 centimeters, unless compacted,

culturally sterile soil or bedrock was encountered. Of the 11 shovel tests excavated, none produced any cultural materials. The shovel test excavations, detailed in Table 5.3-2, reached a maximum depth of 50 centimeters.

Because of the lack of artifacts within the APE, no test unit excavations were conducted at the site. Given the intensity of impacts at the site, especially associated with the installation of the aqueduct, the likelihood for intact subsurface deposits seems very remote.

5.3.3 Laboratory Analysis

The laboratory analysis for SDI-7217B included the standard procedures described in Section 4.2 of this report. The process was obviously abbreviated, as only one artifact, a basalt flake, was recovered from the site.

5.3.4 Discussion

The testing of SDI-7217B demonstrated that the limited and disturbed surface expression of lithic artifacts was not accompanied by any subsurface deposit. The assessment of the site according to the criteria listed in Section 3.0 (integrity, variability, age, and function) is provided below:

- Integrity:* SDI-7217B is characterized as a surface scatter of cultural materials. The site area within the pipeline APE has been intensely disturbed by agricultural use, pipeline installation, and a dirt roads that pass through the site. The previous impacts have significantly affected the site's integrity by disturbing the horizontal association of artifacts. Therefore, its integrity is poor.
- Variability:* The variability of a site consists of the horizontal and vertical separation of cultural materials that represent spatial, temporal, or cultural distinctions. The small quantity of cultural materials, the lack of a substantial subsurface deposit, and the disturbance within the APE, indicate that within the pipeline construction corridor, the site does not exhibit a high degree of variability.
- Age:* The age or cultural affiliation of SDI-7217B could not be satisfactorily determined on the basis of the data collected; no culturally diagnostic artifacts were recovered.
- Function:* The artifacts reported from SDI-7217B are indicative of a temporary camp used to process food materials and to manufacture and maintain lithic tools. The function of this site is much the same as the majority of small sites situated along Salt Creek and the Otay River.

5.3.5 Summary

The testing of SDI-7217B demonstrated that this site consisted of a sparse surface expression of lithic artifacts. The site area within the APE is associated with a prehistoric temporary camp that is associated with the subsistence pattern of either the Archaic (inland La Jolla Complex) or Late Prehistoric (Kumeyaay Indians) occupations of the area. The modern disturbance of the site has generally eliminated any evidence of the artifact content of the site.

5.3.6 Evaluation

The field and laboratory studies conducted for Site SDI-7217B characterize the site as a disturbed surface scatter of cultural materials. The lack of a deep midden, hearth features, and other evidence of extended site occupation suggests that the site was not a permanent camp.

Based on the information derived from the testing program, the site area within the APE is not considered important according to CEQA criteria. Portions of the site located east and west of the APE may include important components of the site; however, investigations were generally limited to the area in or adjacent to the APE.

5.3.7 Impact Assessment

Site SDI-7217B was tested because the alignment for the Salt Creek Sewer Project is tentatively designed to pass within the site boundaries. The pipeline trench is currently designed to stay within the dirt road that passes through the site. Assuming that the trench is kept within the road and associated construction activities will be limited to an area not exceeding 20 feet on either side of the road, then the potential impacts to SDI-7217B will be minimal. Because the portion of SDI-7217B within the APE was evaluated as not important, the impacts to the site within the APE will not be significant.

5.3.8 Native American Heritage Values

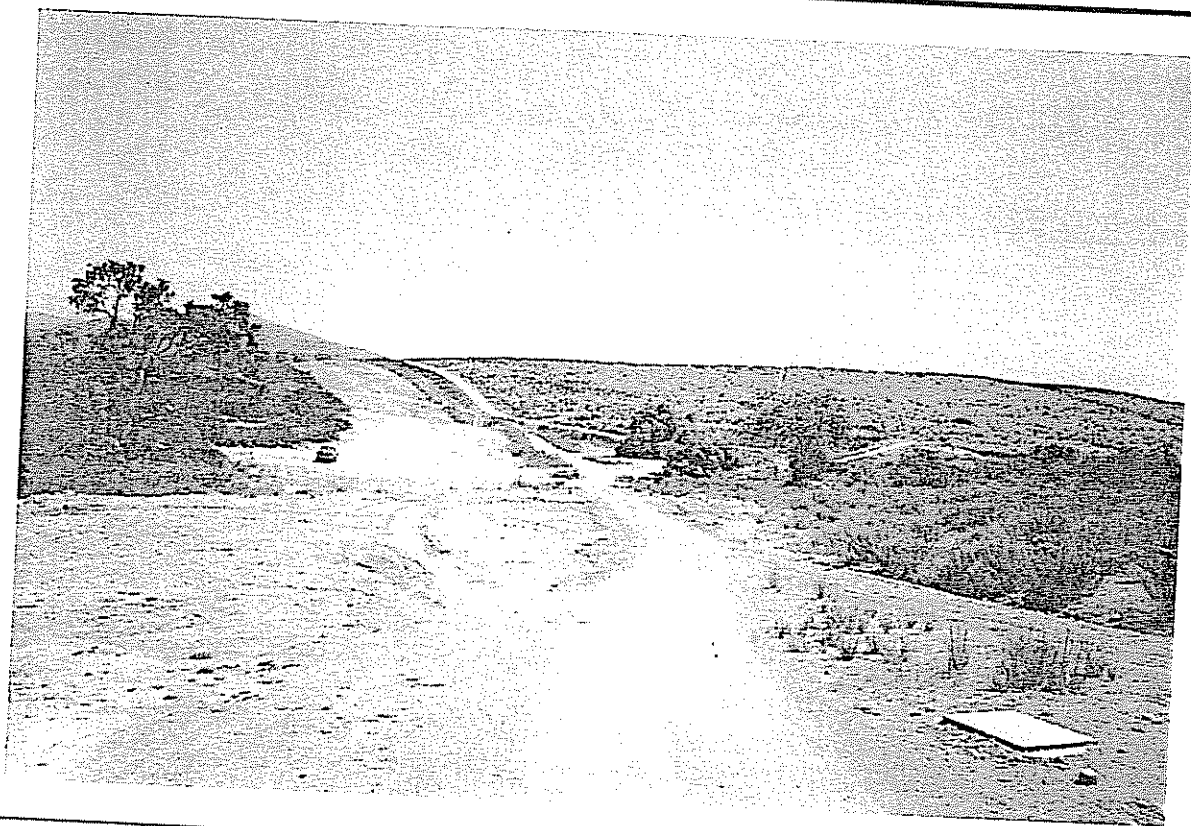
The Native American community was not contacted with regard to this site, as no archaeological materials or remains of special heritage sensitivity to the Native American community were identified at SDI-7217B.

5.3.9 Mitigation Measures

The pipeline construction will impact this site, but no mitigation measures for direct impacts will be necessary. The portion of Site SDI-7217B within the APE has been determined to be not significant. Therefore, no mitigation measures will be required to reduce the significance of construction impacts. However, because of the potential for elements of the site to be masked or buried within the APE, monitoring of the trench excavation will be necessary. Also, because of the potential for significant components of the sites outside of the APE, construction activities must be contained to the APE, and the archaeological monitor will be required to ensure that construction activities will not intrude into any untested portions of SDI-7217B.

Figure 5.3-1
Excavation Location Map — SDI-7217B

**(Deleted for Public Review;
Bound Separately in Confidential Appendix)**



View of Site SDI-7217B, looking north.

View of Site SDI-7217B, looking east.

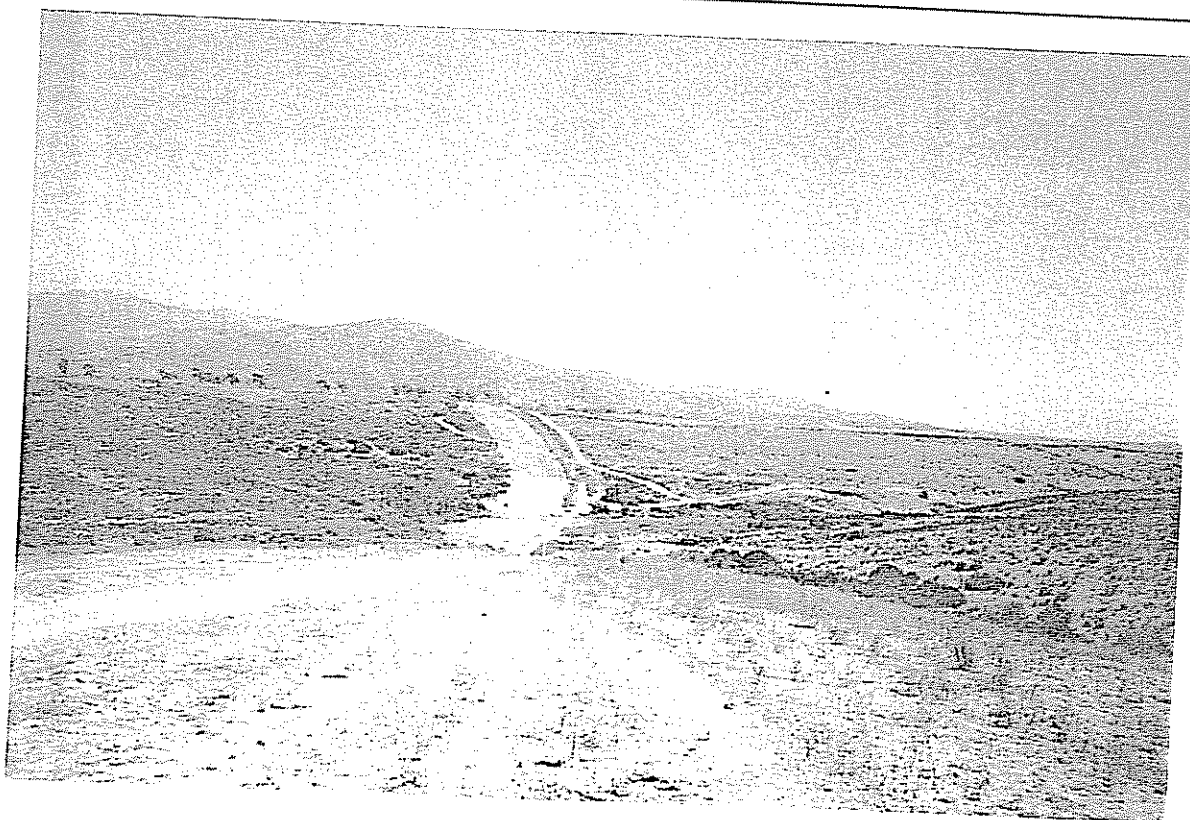


Plate 5.3-1

TABLE 5.3-1

Surface Recovery Data
Site SDI-7217B

Recovery Location	Location from Datum A Azimuth/Range	Quantity	Recovery	Material	Cat. No.
1	41°/39 Feet	1	Flake	MGM*	1

*MGM=Medium-Grained Metavolcanic

TABLE 5.3-2Shovel Test Excavation Data
Site SDI-7217B

Shovel Test	Location from Datum A Azimuth/Range	Depth	Recovery
1	353°/308 Feet	0-10 cm. 10-20 cm. 20-30 cm. 30-40 cm.	No Recovery No Recovery No Recovery No Recovery
2	1°/282 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
3	345°/203 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
4	356°/168 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
5	340°/103 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
6	40°/41 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
7	272°/15 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
8	120°/79 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
9	170°/83 Feet	0-10 cm. 10-20 cm. 20-30 cm. 30-40 cm. 40-50 cm.	No Recovery No Recovery No Recovery No Recovery No Recovery
10	158°/175 Feet	0-10 cm.	No Recovery

Shovel Test	Location from Datum A Azimuth/Range	Depth	Recovery
10	158°/175 Feet	10-20 cm. 20-30 cm. 30-40 cm.	No Recovery No Recovery No Recovery
11	138°/184 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery

5.4 SITE SDI-11,364

5.4.1 Site Description

Site SDI-11,364 is a prehistoric site located between Wolf Canyon and Salt Creek Canyon, on the north side of the Otay River drainage. The site lies on the terrace that parallels the course of the Otay River. The site was recorded as a lithic artifact scatter situated generally on the north side of the dirt road that follows the river course. The site has been disturbed over several years by disking and grazing ranch activities, and by the sand and gravel mining in the Otay River floodplain. The setting of the site is shown in a photograph of the site area provided in Plate 5.4-1. A dirt road passes through the site parallel to the river, which has also disturbed the site. The general location of this resource is shown in Figure 5.0-1. Site SDI-11,364 was originally recorded as a bedrock milling feature and associated artifacts; however, the site now consists of a only surface scatter of lithic artifacts.

The testing program at SDI-11,364 consisted of the mapping and recovery of surface artifacts and the excavation of six shovel tests. Testing methods and unit sizes were consistent with those discussed in the methodology section (Section 4.0). The field investigations at this site were conducted in August of 2000. All artifacts recovered during the field investigations were subjected to the laboratory analysis procedures described in Section 4.2 of this report.

5.4.2 Description of Field Investigations

The field investigations at SDI-11,364 were conducted using the standard methodologies described in Section 4.1. The site has been previously disturbed by sand and gravel mining, as well as the grading of a dirt road through the center of the site. The APE for the project passes through the center most side of SDI-11,364, and all field investigations were focused on the general area of potential impact.

Surface Mapping, Recording, and Collection

The location from which a single surface artifact was recovered at SDI-11,364 is shown in Figure 5.4-1. Other surface artifacts were observed outside of the APE, especially on the terrace elevations to the north of the APE, including manos, flakes, and scrapers. The single artifact recovered within the APE was a basalt (medium-grained metavolcanic) flake (Table 5.4-1). The absence of other lithic materials within the APE is likely due to the extent of previous impacts that have removed or scraped the surface of the site in close proximity to the floodplain. No evidence of the milling feature was observed. Most likely, the milling feature was removed or buried by the sand and gravel mining.

Subsurface Excavations

The potential for the existence of subsurface deposits at SDI-11,364 was investigated with the excavation of a series of six shovel tests. The locations of the tests are shown in Figure 5.4-1.

All of these tests were excavated to a minimum depth of 30 centimeters, unless compacted, culturally sterile soil or bedrock was encountered. No artifacts or ecofacts were recovered from the shovel tests. The shovel test excavation information is provided in Table 5.4-2.

Because the shovel tests did not indicate that a subsurface deposit was present, and in light of the extent of disturbance manifested in the general vicinity of the site, a test unit was not necessary to conclude the testing of the site. The portion of the site within the APE is considered to be disturbed and appears to lack any potential for subsurface deposits.

5.4.3 Laboratory Analysis

The laboratory analysis for SDI-11,364 was limited to the cataloging of a single metavolcanic flake from the surface of the site. No other analyses were conducted for the site.

5.4.4 Discussion

The testing of SDI-11,364 demonstrated that the sparse surface expression within the APE was not accompanied by a subsurface deposit. The disturbance to the site from a number of activities associated with the modern use of the land has reduced the potential importance of the site significantly. The assessment of the site according to the criteria listed in Section 3.0 (integrity, variability, age, and function) is provided below:

- Integrity:** SDI-11,364 is characterized as a surface scatter of cultural materials, most of which are situated north of the APE on higher terrace elevations. The site area within the pipeline APE has been disturbed, and these previous impacts have significantly affected the site's integrity by disturbing the horizontal and vertical association of artifacts. Its integrity is therefore poor.
- Variability:** The variability of a site consists of the horizontal and vertical separation of cultural materials that represent spatial, temporal, or cultural distinctions. The small quantity of cultural materials (a single flake was recovered), the lack of a substantial subsurface deposit, and the disturbance within the APE, indicate that within the pipeline construction corridor, the site does not exhibit a high degree of variability.
- Age:** The age or cultural affiliation of SDI-11,364 could not be satisfactorily determined on the basis of the data collected; no culturally diagnostic artifacts were recovered.
- Function:** The artifacts observed outside of the APE and the specimen recovered, as well as the reported presence of a milling feature, are indicative of a temporary camp used to process food materials and to manufacture and maintain lithic tools. The function of this site is much the same as the majority of small sites situated along Salt Creek and the Otay River.

5.4.5 Summary

The testing of SDI-11,364 demonstrated that this site consisted of a sparse surface expression of lithic artifacts. The site area within the APE has been disturbed to the extent that the surface expression of the resource no longer resembles that found within the site boundaries to the north.

5.4.6 Evaluation

The field and laboratory studies conducted for Site SDI-11,364 characterize the site as a surface scatter of cultural materials. The artifact collection (primarily that portion observed outside of the APE and not collected) indicates that the site was used primarily as a resource extraction site where site activities included the procurement and processing of food resources, as well as lithic tool production. The lack of a deep midden, hearth features, and other evidence of extended site occupation suggests that the site was not a permanent camp.

Based on the information derived from the testing program, the site area within the APE is not considered important according to CEQA criteria. Portions of the site located north of the APE may include important components of the site; however, investigations were generally limited to the area in or adjacent to the APE.

5.4.7 Impact Assessment

Site SDI-11,364 was tested because the alignment for the Salt Creek Sewer Project is tentatively designed to pass within the site boundaries. The pipeline trench is currently designed to stay within the dirt road that passes along the south boundary of the site. Assuming that the trench is kept within the road and associated construction activities will be limited to an area not exceeding 20 feet on either side of the road, then the potential impacts to SDI-11,364 will be minimal. Because the portion of SDI-11,364 within the APE was evaluated as not important, the impacts to the site within the APE will not be significant.

5.4.8 Native American Heritage Values

The Native American community was not contacted with regard to this site, as no archaeological materials or remains of special heritage sensitivity to the Native American community were identified at SDI-11,364.

5.4.9 Mitigation Measures

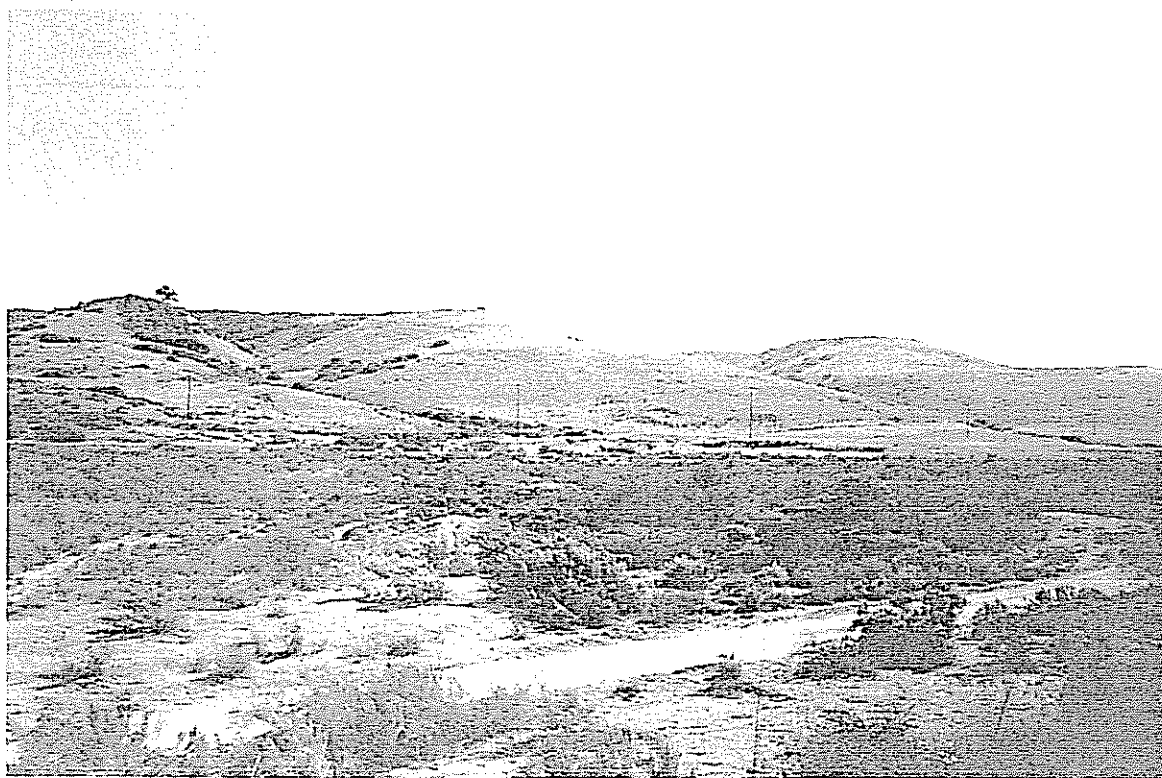
The pipeline construction will impact this site, but no mitigation measures for direct impacts will be necessary. The portion of Site SDI-11,364 within the APE has been determined to be not significant. Therefore, no mitigation measures will be required to reduce the significance of construction impacts. However, because of the potential of elements of the site to be masked or buried within the APE, monitoring of the trench excavation will be necessary. Also, because of potential of significant components of the site outside of the APE, construction activities must be

contained to the APE, and the archaeological monitor will be required to ensure that construction activities will not intrude into any untested portions of SDI-11,364.

Figure 5.4-1

Excavation Location Map — SDI-11,364

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Bound Separately in Confidential Appendix)**



View of Site SDI-11,364, looking south.

TABLE 5.4-1

Surface Recovery Data
Site SDI-11,364

Recovery Location	Location from Datum A Azimuth/Range	Quantity	Recovery	Material	Cat. No.
1	75°/32 Feet	1	Flake	MGM*	1

*MGM=Medium-Grained Metavolcanic

TABLE 5.4-2

Shovel Test Excavation Data
Site SDI-11,364

Shovel Test	Location from Datum A Azimuth/Range	Depth	Recovery
1	85°/33 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
2	17°/62 Feet	0-10 cm. 10-20 cm. 20-30 cm. 30-40 cm.	No Recovery No Recovery No Recovery No Recovery
3	275°/138 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
4	264°/282 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
5	250°/269 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
6	245°/130 Feet	0-10 cm. 10-20 cm. 20-30 cm. 30-40 cm. 40-50 cm.	No Recovery No Recovery No Recovery No Recovery No Recovery

5.5 SITE SDI-11,374

5.5.1 Site Description

Site SDI-11,374 is a prehistoric site located just north of the Otay River floodplain and directly adjacent to the large prehistoric site of SDI-12,809. The site was described in the record forms as a small lithic scatter that was also associated with a small quantity of potential historic metal specimens. The site lies in an area very close to the river floodplain and has consequently been disturbed by several activities in the past, specifically the mining of sand and gravel. The setting of the site is shown in photographs provided in Plate 5.5-1. Dirt roads, which have disturbed the resource, pass through the site. The general location of this resource is shown in Figure 5.0-1. Site SDI-11,374 consists of a surface scatter of lithic artifacts.

The testing program at SDI-11,374 consisted of the mapping and recovery of surface artifacts, and the excavation of four shovel tests. Testing methods and unit sizes were consistent with those discussed in the methodology section (Section 4.0). The field investigations at this site were conducted in August, 2000. All artifacts recovered during the field investigations were subjected to the laboratory analysis procedures described in Section 4.2 of this report.

5.5.2 Description of Field Investigations

The field investigations at SDI-11,374 were conducted using the standard methodologies described in Section 4.1. The site was disturbed by mining activities, as well as the grading of dirt roads through the site. The APE for the project passes through the northern side of SDI-11,374, and all field investigations were focused on the general area of potential impact.

Surface Mapping, Recording, and Collection

The review of the surface of the site resulted in the discovery of a single artifact. The extent of previous impacts has apparently severely disturbed the site. The location of the single artifact is shown in Figure 5.5-1. The surface collection data is provided in Table 5.5-1. The recovered artifact is a fine-grained metavolcanic core.

Subsurface Excavations

The potential for the existence of subsurface deposits at SDI-11,374 was investigated with the excavation of a series of four shovel tests. The locations of the tests are shown in Figure 5.5-1. All of these tests were excavated to a minimum depth of 30 centimeters. All of the shovel tests were negative, as no cultural materials were discovered in the excavations. The shovel test excavation data is provided in Table 5.5-2. Due to the extent of impacts to the site and the fact that the shovel tests provided no indications that any buried deposits were present within the site, a test unit was not excavated as part of the testing program.

5.5.3 Laboratory Analysis

The laboratory analysis for SDI-11,374 was abbreviated due to the small quantity of materials from the site. The only artifact collected was identified as a fine-grained metavolcanic core. No other laboratory analyses were conducted at the site, other than cataloging of the surface collection. The specimen was complete and was derived from felsite.

5.5.4 Discussion

The testing of SDI-11,374 demonstrated that the surface expression of lithic artifacts was not accompanied by a subsurface deposit. It appears that previous impacts have completely removed any potential for important resources at this location. The assessment of the site according to the criteria listed in Section 3.0 (integrity, variability, age, and function) is provided below:

- Integrity:* SDI-11,374 is characterized as a surface scatter of cultural materials. The site area within the pipeline APE has been extensively disturbed by agricultural use and mining in the area of the site. The previous impacts have significantly affected the site's integrity by disturbing the horizontal and vertical association of artifacts. Therefore, its integrity is poor.
- Variability:* The variability of a site consists of the horizontal and vertical separation of cultural materials that represent spatial, temporal, or cultural distinctions. The small quantity of cultural materials (a single core was recovered), the lack of a substantial subsurface deposit, and the disturbance within the APE indicate that within the pipeline construction corridor, the site does not exhibit a high degree of variability.
- Age:* The age or cultural affiliation of SDI-11,374 could not be satisfactorily determined on the basis of the data collected; no culturally diagnostic artifacts were recovered.
- Function:* The artifact recovered from SDI-11,374 is indicative of a temporary camp used to process food materials and to manufacture and maintain lithic tools. The function of this site is much the same as the majority of small sites situated along Salt Creek and the Otay River.

5.5.5 Summary

The testing of SDI-11,374 demonstrated that this site consisted of a sparse surface expression of lithic artifacts. The site area within the APE has been impacted; however, given the site report which indicated the presence of lithic artifacts and close proximity of this site to the village site at SDI-12,809, the site can be projected to have been a prehistoric temporary camp that is associated with the subsistence pattern of either the Archaic (inland La Jolla Complex) or Late

Prehistoric (Kumeyaay Indians) occupations of the area.

5.5.6 Evaluation

The field and laboratory studies conducted for Site SDI-11,374 characterize the site as a surface scatter of cultural materials indicating that the site was a resource extraction location where activities included the procurement and processing of food resources, as well as lithic tool production. The lack of a deep midden, hearth features, and other evidence of extended site occupation suggests that the site was not a permanent camp.

Based on the information derived from the testing program, the site area within the APE is not considered important according to CEQA criteria. Portions of the site located south of the APE may include important components of the site; however, investigations were generally limited to the area in or adjacent to the APE.

5.5.7 Impact Assessment

Site SDI-11,374 was tested because the alignment for the Salt Creek Sewer Project is tentatively designed to pass within the site boundaries. The pipeline trench is currently designed to stay within the dirt road that passes through the site. Assuming that the trench is kept within the road and associated construction activities will be limited to an area not exceeding 20 feet on either side of the road, then the potential impacts to SDI-11,374 will be minimal. Because the portion of SDI-11,374 within the APE was evaluated as not important, the impacts to the site within the APE will not be significant.

5.5.8 Native American Heritage Values

The Native American community was not contacted with regard to this site, as no archaeological materials or remains of special heritage sensitivity to the Native American community were identified at SDI-11,374.

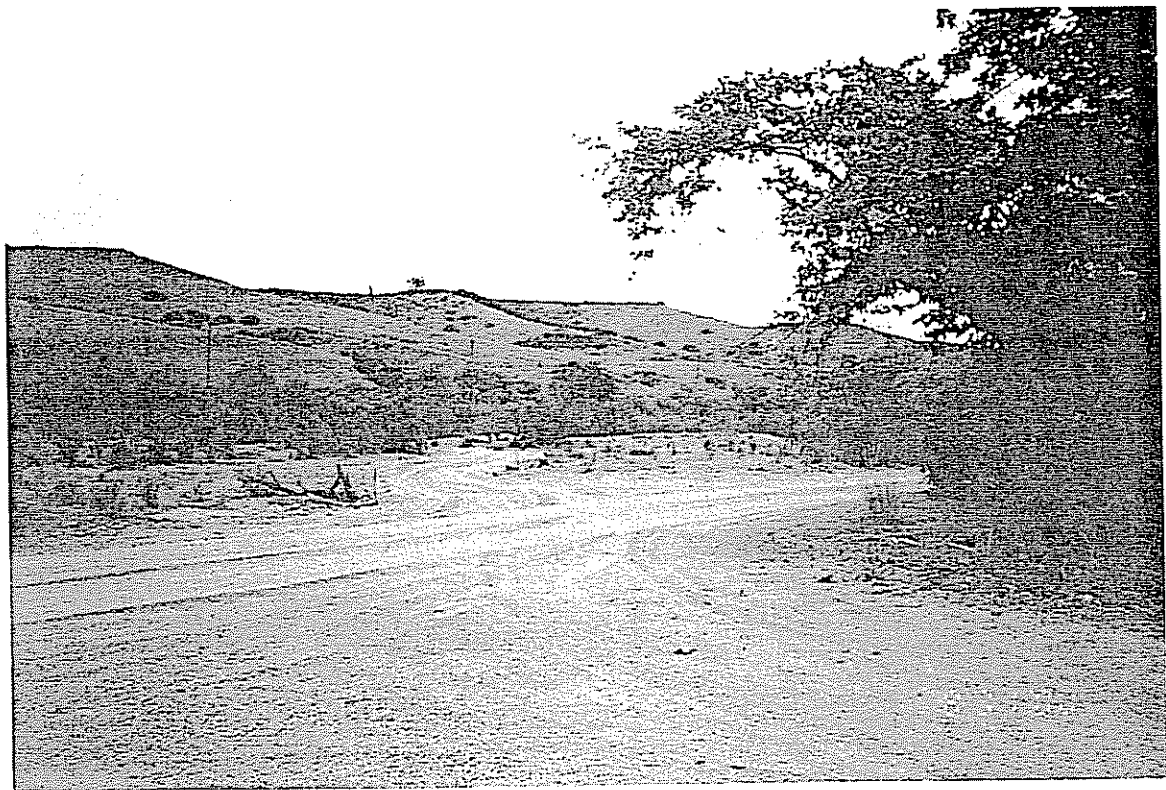
5.5.9 Mitigation Measures

The pipeline construction will impact this site, but no mitigation measures for direct impacts will be necessary. The portion of Site SDI-11,374 within the APE has been determined to be not significant. Therefore, no mitigation measures will be required to reduce the significance of construction impacts. However, because of the potential for elements of the site to be masked or buried within the APE, monitoring of the trench excavation will be necessary. Also, because of the potential for significant components of the site outside of the APE, construction activities must be contained to the APE, and the archaeological monitor will be required to ensure that construction activities will not intrude into any untested portions of SDI-11,374.

Figure 5.5-1

Excavation Location Map — SDI-11,374

**(Deleted for Public Review;
Bound Separately in Confidential Appendix)**



View of Site SDI-11,374, looking southwest.

View of Site SDI-11,374, looking south.



Plate 5.5-1

TABLE 5.5-1

Surface Recovery Data
Site SDI-11,374

Recovery Location	Location from Datum A Azimuth/Range	Quantity	Recovery	Material	Cat. No.
1	80°/62 Feet	1	Core	FGM*	1

*FGM=*Fine-Grained Metavolcanic*

TABLE 5.5-2

Shovel Test Excavation Data
Site SDI-11,374

Shovel Test	Location from Datum A Azimuth/Range	Depth	Recovery
1	280°/8 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
2	80°/64 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
3	81°/125 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
4	84°/183 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery

5.6 SITE SDI-11,378

5.6.1 Site Description

Site SDI-11,378 is a prehistoric site located east of the mouth of Wolf Canyon. The site lies on a slope on the base of a hill that overlooks the junction of Wolf Canyon and Otay Valley. The site has been disturbed, but patches of coastal sage vegetation remain in the otherwise disturbed landscape. The setting of the site is shown in a photograph of the site area provided in Plate 5.6–1. A dirt road, which represents the proposed pipeline alignment up Wolf Canyon, passes through the east side of the site parallel to the Wolf Creek Drainage. The general location of this resource is shown in Figure 5.0–1. The record form for Site SDI-11,378 states that the resource consists of a dense surface scatter of lithic artifacts.

The testing program at SDI-11,378 consisted of the mapping of surface components of the site and the excavation of six shovel tests. Testing methods and unit sizes were consistent with those discussed in the methodology section (Section 4.0). The field investigations at this site were conducted in August, 2000.

5.6.2 Description of Field Investigations

The field investigations at SDI-11,378 were conducted using the standard methodologies described in Section 4.1. The site was disturbed by mining activities, as well as the grading of dirt roads through the site as part of the Rock Mountain Quarry operation. The APE for the project passes through the eastern side of SDI-11,378, and all field investigations were focused on the general area of potential impact.

Surface Mapping, Recording, and Collection

The review of the surface of the site did not result in the discovery of any artifacts within the APE; however, a small, sparse scatter of lithic materials is present on the top of the hill directly west of the APE. The extent of previous impacts has apparently severely disturbed the lower slopes on the east side of the site.

Subsurface Excavations

The potential for the existence of subsurface deposits at SDI-11,378 was investigated with the excavation of a series of six shovel tests. The locations of the tests are shown in Figure 5.6–1. All of these tests were excavated to a depth of 30 centimeters. All of the shovel tests were negative, as no cultural materials were discovered in the excavations. The shovel test excavation data is provided in Table 5.6–1. Due to the extent of impacts to the site and the fact that the shovel tests provided no indications that any buried deposits were present within the site, a test unit was not excavated as part of the testing program.

5.6.3 Laboratory Analysis

The laboratory analysis for SDI-11,378 was abbreviated due to the lack of any artifacts from the site.

5.6.4 Discussion

The testing of SDI-11,378 demonstrated that the reported surface expression of lithic artifacts is no longer present within the APE, but exists west of the APE. It appears that previous impacts have completely removed any potential for important resources at this location. The assessment of the site according to the criteria listed in Section 3.0 (integrity, variability, age, and function) is provided below:

- Integrity: SDI-11,378 is characterized as a surface scatter of cultural materials. The site area within the pipeline APE has been extensively disturbed by mining in the area of the site. The previous impacts have significantly affected the site's integrity by disturbing the horizontal and vertical association of artifacts. Therefore, its integrity is poor.
- Variability: The variability of a site consists of the horizontal and vertical separation of cultural materials that represent spatial, temporal, or cultural distinctions. The lack of a substantial subsurface deposit and the disturbance within the APE indicate that, within the pipeline construction corridor, the site does not exhibit a high degree of variability.
- Age: The age or cultural affiliation of SDI-11,378 could not be satisfactorily determined on the basis of the data collected; no culturally diagnostic artifacts were recovered.
- Function: The artifacts observed west of the APE at SDI-11,378 are indicative of a temporary camp used to process food materials and to manufacture and maintain lithic tools. The function of this site is much the same as the majority of small sites situated along Wolf Canyon and the Otay River.

5.6.5 Summary

The testing of SDI-11,378 demonstrated that this site consisted of a sparse surface expression of lithic artifacts just west of the APE, but no resources remain within the APE because of previous impacts. The site can be projected to have been a prehistoric temporary camp that is associated with the subsistence pattern of either the Archaic (inland La Jolla Complex) or Late Prehistoric (Kumeyaay Indians) occupations of the area.

5.6.6 Evaluation

The record for Site SDI-11,378 characterizes the site as a surface scatter of cultural materials indicating that the site was a resource extraction location where activities included the procurement and processing of food resources, as well as lithic tool production. The lack of a deep midden, hearth features, and other evidence of extended site occupation suggests that the site was not a permanent camp.

Based on the information derived from the testing program, the site area within the APE is not considered important according to CEQA criteria. Portions of the site located west of the APE may include important components of the site; however, investigations were generally limited to the area in or adjacent to the APE.

5.6.7 Impact Assessment

Site SDI-11,378 was tested because the alignment for the Wolf Canyon spur of the Salt Creek Sewer Project is tentatively designed to pass within the site boundaries. The pipeline trench is currently designed to stay within the dirt road that passes on the east side of the site. Assuming that the trench is kept within the road and associated construction activities will be limited to an area not exceeding 20 feet on either side of the road, then the potential impacts to SDI-11,378 will be minimal. Because the portion of SDI-11,378 within the APE was evaluated as not important, the impacts to the site within the APE will not be significant.

5.6.8 Native American Heritage Values

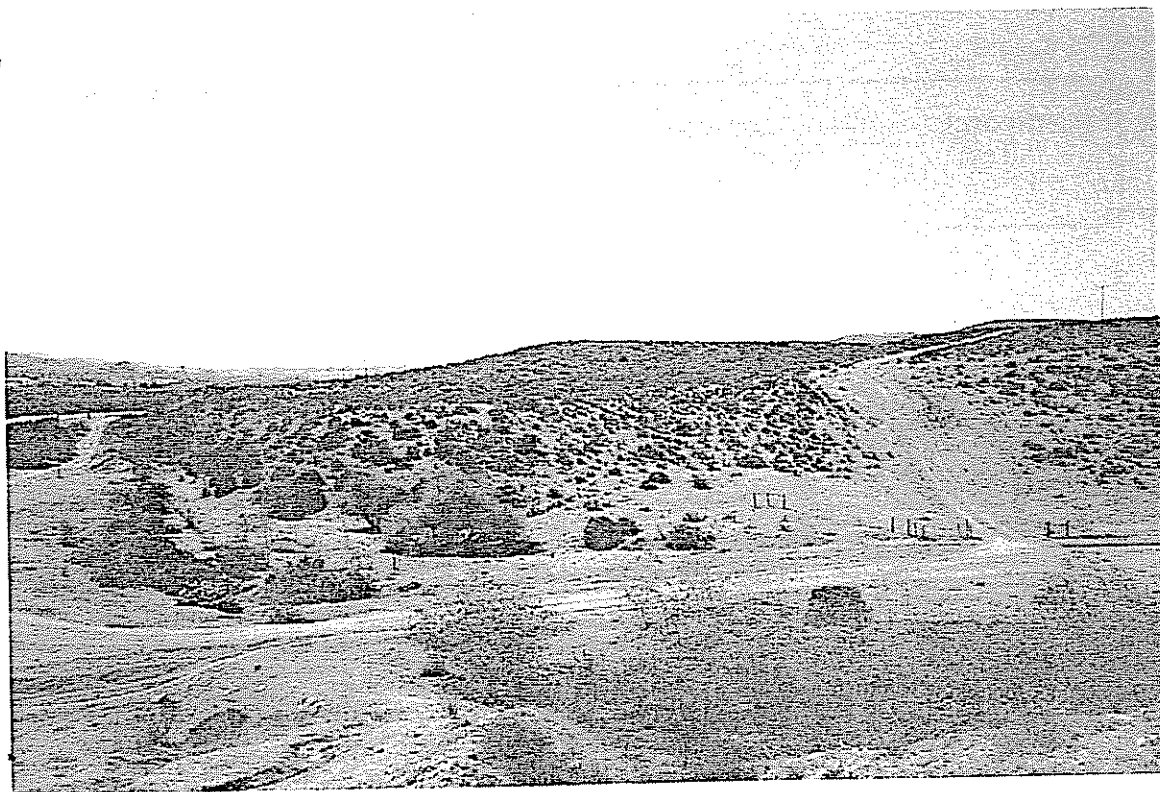
The Native American community was not contacted with regard to this site, as no archaeological materials or remains of special heritage sensitivity to the Native American community were identified at SDI-11,378.

5.6.9 Mitigation Measures

The pipeline construction will impact this site, but no mitigation measures for direct impacts will be necessary. The portion of Site SDI-11,378 within the APE has been determined to be not significant. Therefore, no mitigation measures will be required to reduce the significance of construction impacts. However, because of the potential for elements of the site to be masked or buried within the APE, monitoring of the trench excavation will be necessary. Also, because of the potential for significant components of the site outside of the APE, construction activities must be contained to the APE, and the archaeological monitor will be required to ensure that construction activities will not intrude into any untested portions of SDI-11,378.

Figure 5.6-1
Excavation Location Map — SDI-11,378

**(Deleted for Public Review;
Bound Separately in Confidential Appendix)**



View of Site SDI-11,378, looking west.

TABLE 5.6-1

Shovel Test Excavation Data
Site SDI-11,378

Shovel Test	Location from Datum A Azimuth/Range	Depth	Recovery
1	191°/34 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
2	0°/0 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
3	7°/60 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
4	0°/121 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
5	4°/162 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
6	5°/198 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery

5.7 SITE SDI-12,278

5.7.1 Site Description

Site SDI-12,278 is a prehistoric site located on the west of Salt Creek Canyon. The site lies on a slope adjacent to Salt Creek. The site record for SDI-12,278 characterizes the resource as a lithic scatter including ground stone and lithic tools, with reports of fire-affected rock suggesting fire hearths are present within the site. The slopes of the site have been recently disked; however, the slopes east of the site are covered in coastal sage vegetation. The setting of the site is shown in photographs of the site area provided in Plate 5.7-1. A dirt road, which has disturbed the site, passes through the site parallel to Salt Creek. The general location of this resource is shown in Figure 5.0-1. Site SDI-12,278 consists of a surface scatter of lithic artifacts.

The testing program at SDI-12,278 consisted of the mapping and recovery of surface artifacts and the excavation of six shovel tests. Testing methods and unit sizes were consistent with those discussed in the methodology section (Section 4.0). The field investigations at this site were conducted in August, 2000. All artifacts recovered during the field investigations were subjected to the laboratory analysis procedures described in Section 4.2 of this report.

5.7.2 Description of Field Investigations

The field investigations at SDI-12,278 were conducted using the standard methodologies described in Section 4.1. The site was disturbed by agricultural and grazing activities over the past 100 years, as well as the grading of a dirt road through the east side of the site. The APE for the project passes through the eastern most side of SDI-12,278, and all field investigations were focused on the general area of potential impact.

Surface Mapping, Recording, and Collection

The locations from which surface artifacts were recovered at SDI-12,278 are shown in Figure 5.7-1. The locations of the surface artifacts were recorded to establish the boundaries of the site within the APE. Based upon the surface recovery data, the area of the site within the APE measures approximately 240 feet (73 meters) from north to south and 25 feet (eight meters) from west to east, covering an area of approximately 6,000 square feet (584 square meters). The total dimensions of the site were not established as part of this study.

The surface collection is summarized in Table 5.7-1, and a complete list of the individual surface artifacts and provenience information is provided in Table 5.7-2. The five surface locations at SDI-12,278 yielded a total of five artifacts, consisting of one scraper/hammerstone, three pieces of debitage, and one core. The collection was dominated by lithic production waste, which accounted for 80% (N=4) of the collection. The lithic materials recovered from the surface collection consist of fine- and medium-grained metavolcanic material.

Subsurface Excavations

The potential for the existence of subsurface deposits at SDI-12,278 was investigated with the excavation of a series of six shovel tests. The locations of the tests are shown in Figure 5.7-1. All of these tests were excavated to a depth of 30 centimeters. Of the six shovel tests excavated, none yielded cultural materials. The shovel test excavations are detailed in Table 5.7-3.

Because the shovel tests did not reveal any evidence of a subsurface deposit, a test unit was not excavated as part of the site evaluation. The potential does exist for the presence of subsurface deposits west of the APE, where a larger surface scatter was observed.

5.7.3 Laboratory Analysis

The laboratory analysis for SDI-12,278 included the standard procedures described in Section 4.2 of this report. All of the artifacts recovered from the field investigations conducted at the site were returned to the laboratory to be cleaned as necessary, cataloged, and analyzed. The total collection of cultural materials from SDI-12,278 consisted of three pieces of debitage, one core, and one scraper/hammerstone tool. The materials recovered indicate that lithic production was a common site activity.

Lithic Analysis

The collection of five lithic artifacts was dominated by lithic production waste, which accounted for 80% (N=4) of the collection. The remainder of the collection consisted of one combination percussion/precision tool which represented 20% of the total artifact recovery.

The lithic material distribution of the recovery from the site was represented by two fine-grained metavolcanic specimens and three medium-grained metavolcanic specimens. Both types of metavolcanic rock types are present within the general vicinity of Otay Valley.

5.7.4 Discussion of Field Investigations and Laboratory Analysis

The testing of SDI-12,278 demonstrated that the surface expression of lithic artifacts was not accompanied by a subsurface deposit within the APE. The assessment of the site according to the criteria listed in Section 3.0 (integrity, variability, age, and function) is provided below:

Integrity:

SDI-12,278 is characterized as a surface scatter of cultural materials. The site area within the pipeline APE has been disturbed by agricultural use and a dirt road that passes through the site. The previous impacts have significantly affected the site's integrity by disturbing the horizontal association of artifacts. Therefore, its integrity is poor.

Variability:

The variability of a site consists of the horizontal and vertical separation of cultural materials that represent spatial, temporal, or cultural distinctions. The small quantity of cultural materials, the lack of a substantial subsurface

deposit, and the disturbance within the APE indicate that within the pipeline construction corridor, the site does not exhibit a high degree of variability.

Age: The age or cultural affiliation of SDI-12,278 could not be satisfactorily determined on the basis of the data collected; no culturally diagnostic artifacts were recovered.

Function: The artifacts recovered from SDI-12,278 are indicative of a temporary camp used to process food materials and to manufacture and maintain lithic tools. The function of this site is much the same as the majority of small sites situated along Salt Creek and the Otay River.

5.7.5 Summary

The testing of SDI-12,278 demonstrated that this site consisted of a sparse surface expression of lithic artifacts. The site area within the APE has produced artifacts that indicate the pipeline will pass through a prehistoric temporary camp that is associated with the subsistence pattern of either the Archaic (inland La Jolla Complex) or Late Prehistoric (Kumeyaay Indians) occupations of the area.

5.7.6 Evaluation

The field and laboratory studies conducted for Site SDI-12,278 characterize the site as a surface scatter of cultural materials; however, no evidence of a subsurface deposit was detected within the project APE. The artifacts observed at the site, notably west of the APE, indicate that the site was used primarily as a resource extraction site, where site activities included the procurement and processing of food resources, as well as lithic tool production.

Based on the information derived from the testing program, the site area within the APE is not considered important according to CEQA criteria. Portions of the site located west of the APE may include important components of the site; however, investigations were generally limited to the area in or adjacent to the APE.

5.7.7 Impact Assessment

Site SDI-12,278 was tested because the alignment for the Salt Creek Sewer Project is tentatively designed to pass within the site boundaries. The pipeline trench is currently designed to stay within the dirt road that passes along the east side of the site. Assuming that the trench is kept within the road and associated construction activities will be limited to an area not exceeding 20 feet on either side of the road, then the potential impacts to SDI-12,278 will be minimal. Because the portion of SDI-12,278 within the APE was evaluated as not important, the impacts to the site within the APE will not be significant.

5.7.8 Native American Heritage Values

The Native American community was not contacted with regard to this site, as no archaeological materials or remains of special heritage sensitivity to the Native American community were identified at SDI-12,278.

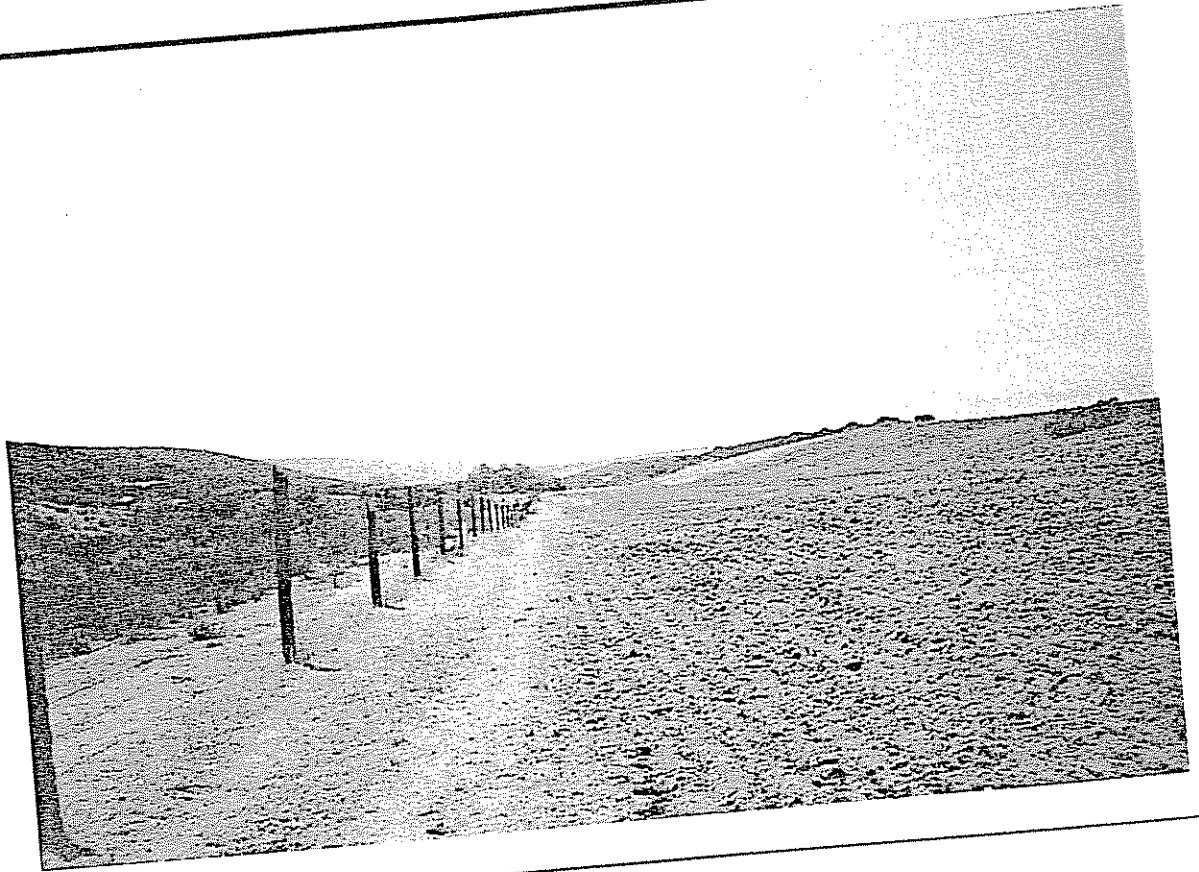
5.7.9 Mitigation Measures

The pipeline construction will impact this site, but no mitigation measures for direct impacts will be necessary. The portion of Site SDI-12,278 within the APE has been determined to be not significant. Therefore, no mitigation measures will be required to reduce the significance of construction impacts. However, because of the potential for elements of the site to be masked or buried within the APE, monitoring of the trench excavation will be necessary. Also, because of the potential for significant components of the site outside of the APE, construction activities must be contained to the APE, and the archaeological monitor will be required to ensure that construction activities will not intrude into any untested portions of SDI-12,278.

Figure 5.7-1

Excavation Location Map — SDI-12,278

**(Deleted for Public Review;
Bound Separately in Confidential Appendix)**



View of Site SDI-12,278, looking south.

View of Site SDI-12,278, looking north.

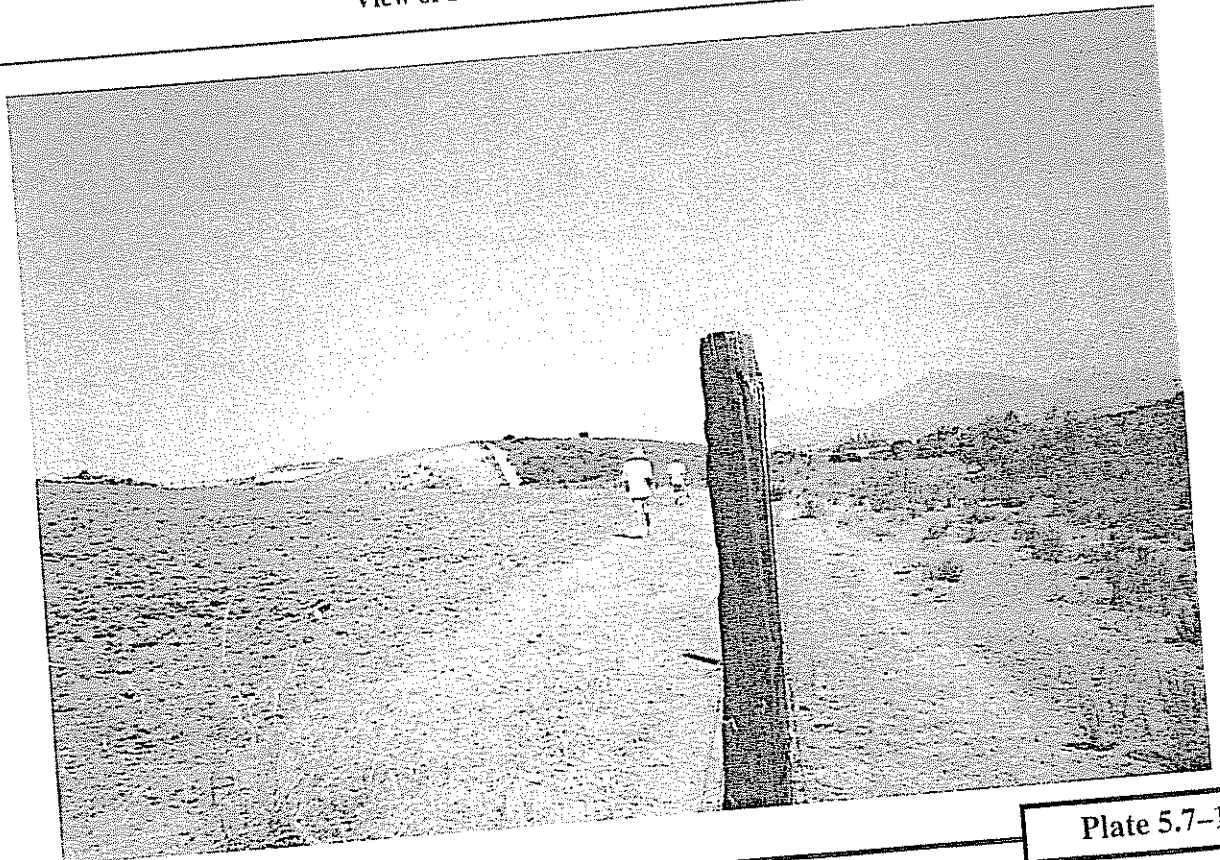


Plate 5.7-1

TABLE 5.7-1
Summary of Surface Recovery
Site SDI-12,278

Recovery Category	Quantity	Percent
Lithic Production Waste: Core Debitage	1 3	20.00 60.00
Multi-Use Tools: Scraper/Hammerstone	1	20.00
Total	5	100.00

TABLE 5.7-2

Surface Recovery Data
Site SDI-12,278

Recovery Location	Location from Datum A Azimuth/Range	Quantity	Recovery	Material	Cat. No.
1	335°/68 Feet	1	Scraper/Hammerstone, Circular	MGM*	1
2	259°/43 Feet	1	Debitage	FGM**	2
3	199°/153 Feet	1	Debitage	FGM	3
4	184°/174 Feet	1	Debitage	MGM	4
5	320°/59 Feet	1	Core	MGM	5

*MGM=Medium-Grained Metavolcanic

**FGM=Fine-Grained Metavolcanic

TABLE 5.7-3

Shovel Test Excavation Data
Site SDI-12,278

Shovel Test	Location from Datum A Azimuth/Range	Depth	Recovery
1	336°/74 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
2	295°/30 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
3	220°/40 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
4	192°/88 Feet	0-10 cm. 10-20 cm. 20-30 cm. 30-40 cm.	No Recovery No Recovery No Recovery No Recovery
5	189°/140 Feet	0-10 cm. 10-20 cm. 20-30 cm. 30-40 cm. 40-50 cm.	No Recovery No Recovery No Recovery No Recovery No Recovery
6	190°/179 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery

5.8 SITE SDI-12,288

5.8.1 Site Description

Site SDI-12,288 is a prehistoric site located near the slopes of Wolf Canyon, within 500 feet of the Otay Ranch Farm Complex site. The site lies on a slope and hill top south of the Wolf Canyon drainage. The site was reported to include a lithic scatter with tools. Ogden made a surface collection of artifacts in 1992. A dirt trail, which represents the general proposed alignment for the sewer pipeline, passes along the Wolf Canyon drainage. The alignment corridor passes along the south side of the site. The entire site area has been disked repeatedly over the past 100 years and is currently being used for agricultural purposes and grazing. The setting of the site is shown in photographs of the site area provided in Plate 5.8-1. The general location of this resource is shown in Figure 5.0-1.

The testing program at SDI-12,288 consisted of the mapping of the site area and the excavation of ten shovel tests. Testing methods and unit sizes were consistent with those discussed in the methodology section (Section 4.0). The field investigations at this site were conducted in August, 2000.

5.8.2 Description of Field Investigations

The field investigations at SDI-12,288 were conducted using the standard methodologies described in Section 4.1. The site has been disturbed by agricultural and grazing activities over the past 100 years. The APE for the project passes along the northern side of SDI-12,288, and all field investigations were focused on the general area of potential impact.

Surface Mapping, Recording, and Collection

While surface artifacts were observed just outside of the APE, only a single metate fragment and scattered marine shell was located within the APE. Ogden reportedly collected artifacts at the site; however, a complete listing of the recovery did not appear in the 1992 report or the site form. The surface collection recovery from the current study has been provided in Table 5.8-1.

Subsurface Excavations

The potential for the existence of subsurface deposits at SDI-12,288 was investigated with the excavation of a series of ten shovel tests. The locations of the tests are shown in Figure 5.8-1. All of these tests were excavated to a minimum depth of 30 centimeters. Of the ten shovel tests excavated, none yielded any artifacts or evidence of a subsurface deposit within the site. The excavation data for the shovel tests is provided in Table 5.8-2. Because the shovel tests did not reveal any evidence of a subsurface component at the site, a test unit was not excavated as part of the significance analysis.

5.8.3 Laboratory Analysis

The laboratory analysis for SDI-12,288 was limited by the small quantity of surface artifacts. The metate fragment recovered was cataloged as having a unifacial surface, with evidence of a pecking. It showed signs of heavy use, with polished surfaces and a deep basin worn from grinding. The marine shell recovered was classified as *Chione* sp., and a total of 4.2 grams was collected from a single location. No other laboratory procedures were conducted for the collection from the site, given the sparse nature of the recovery.

5.8.4 Discussion

The testing of SDI-12,288 demonstrated that a portion of the site was located within the APE, although the elements of the site that were studied did not indicate that a subsurface deposit is located within the APE. The site has been disturbed by cultivation, which has affected the potential for buried surface deposits within the site area. The assessment of the site according to the criteria listed in Section 3.0 (integrity, variability, age, and function) is provided below:

- Integrity:* Within the APE, SDI-12,288 is characterized as a surface scatter of lithic artifacts and marine shell that has been intensely disturbed by repeated disking and agricultural uses. Impacts to the site have removed all evidence of the prehistoric use of the site. Therefore, its integrity is poor.
- Variability:* Within the APE, the cultural materials observed included lithic artifacts and marine shell, which suggests that the site was once a temporary camp; however, given that the site produced only one lithic artifact, the site is characterized as representing a very low level of variability.
- Age:* The age or cultural affiliation of SDI-12,288 could not be satisfactorily determined on the basis of the data collected; no culturally diagnostic artifacts were recovered.
- Function:* The data recorded in the site forms combined with observations at SDI-12,288 suggest the site was a temporary camp used to process food materials and to manufacture and maintain lithic tools. The function of this site is much the same as the majority of small sites situated along Salt Creek and the Otay River.

5.8.5 Summary

The testing of SDI-12,288 demonstrated that the site does not contain any significant deposits of cultural materials within the APE. The site itself was a prehistoric temporary camp that is associated with the subsistence pattern of either the Archaic (inland La Jolla Complex) or Late Prehistoric (Kumeyaay Indians) occupations of the area.

5.8.6 Evaluation

The field study conducted for Site SDI-12,288 characterize the site as a very disturbed resource. Based on the information derived from the testing program, the site area within the APE is not considered important according to CEQA criteria. Portions of the site located south of the APE may include important components of the site; however, investigations were generally limited to the area in or adjacent to the APE.

5.8.7 Impact Assessment

Site SDI-12,288 was tested because the alignment for the Wolf Canyon segment of the Salt Creek Sewer Project is tentatively designed to pass along the north side of the site. The pipeline trench is currently designed to stay within the dirt trail that passes on the north side the site. Assuming that the trench is kept within the trail and associated construction activities will be limited to an area not exceeding 20 feet on either side of the trail, then the potential impacts to SDI-12,288 will be minimal. Because the portion of SDI-12,288 within the APE was evaluated as not important, the impacts to the site within the APE will not be significant.

5.8.8 Native American Heritage Values

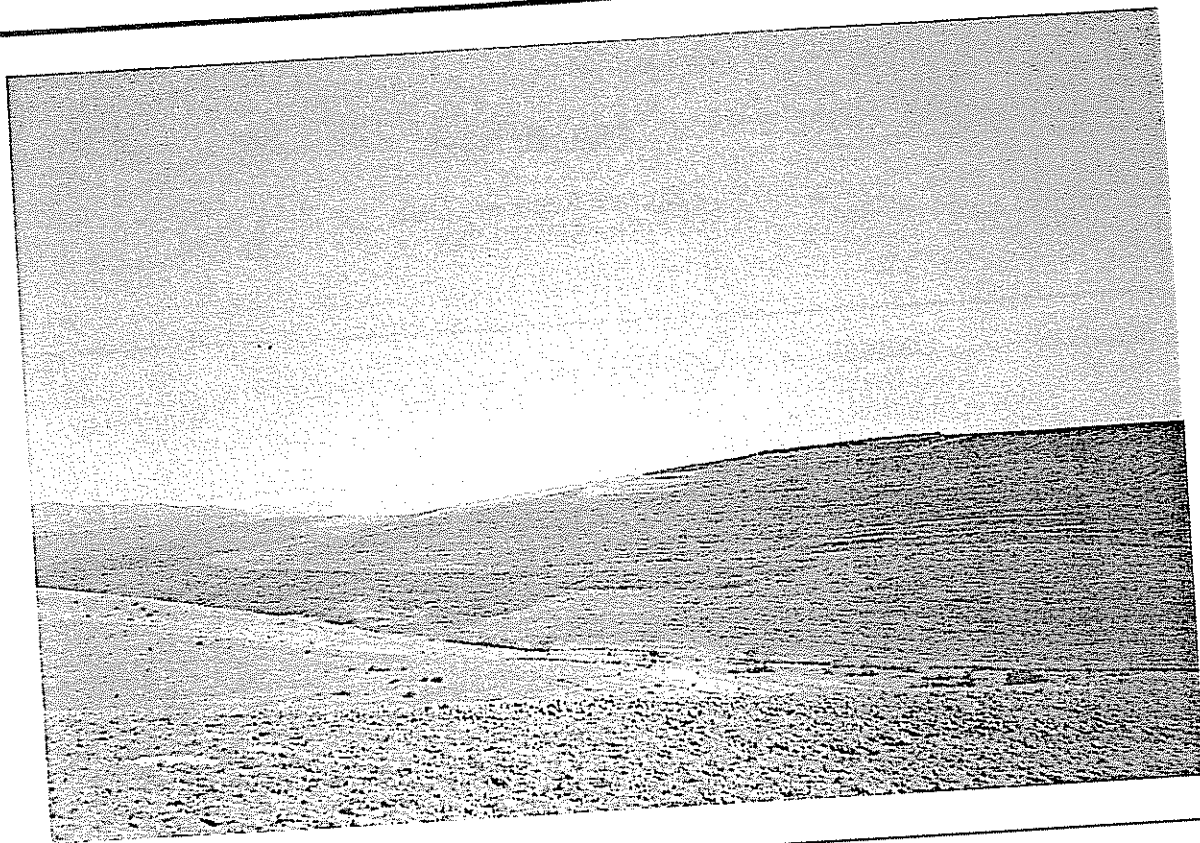
The Native American community was not contacted with regard to this site, as no archaeological materials or remains of special heritage sensitivity to the Native American community were identified at SDI-12,288.

5.8.9 Mitigation Measures

The pipeline construction will impact this site, but no mitigation measures for direct impacts will be necessary. The portion of Site SDI-12,288 within the APE has been determined to be not significant. Therefore, no mitigation measures will be required to reduce the significance of construction impacts. However, because of the potential for elements of the site to be masked or buried within the APE, monitoring of the trench excavation will be necessary. Also, because of the potential for significant components of the site outside of the APE, construction activities must be contained to the APE, and the archaeological monitor will be required to ensure that construction activities will not intrude into any untested portions of SDI-12,288.

Figure 5.8-1
Excavation Location Map — SDI-12,288

**(Deleted for Public Review;
Bound Separately in Confidential Appendix)**



View of Site SDI-12,288, looking south.

View of Site SDI-12,288, looking east.

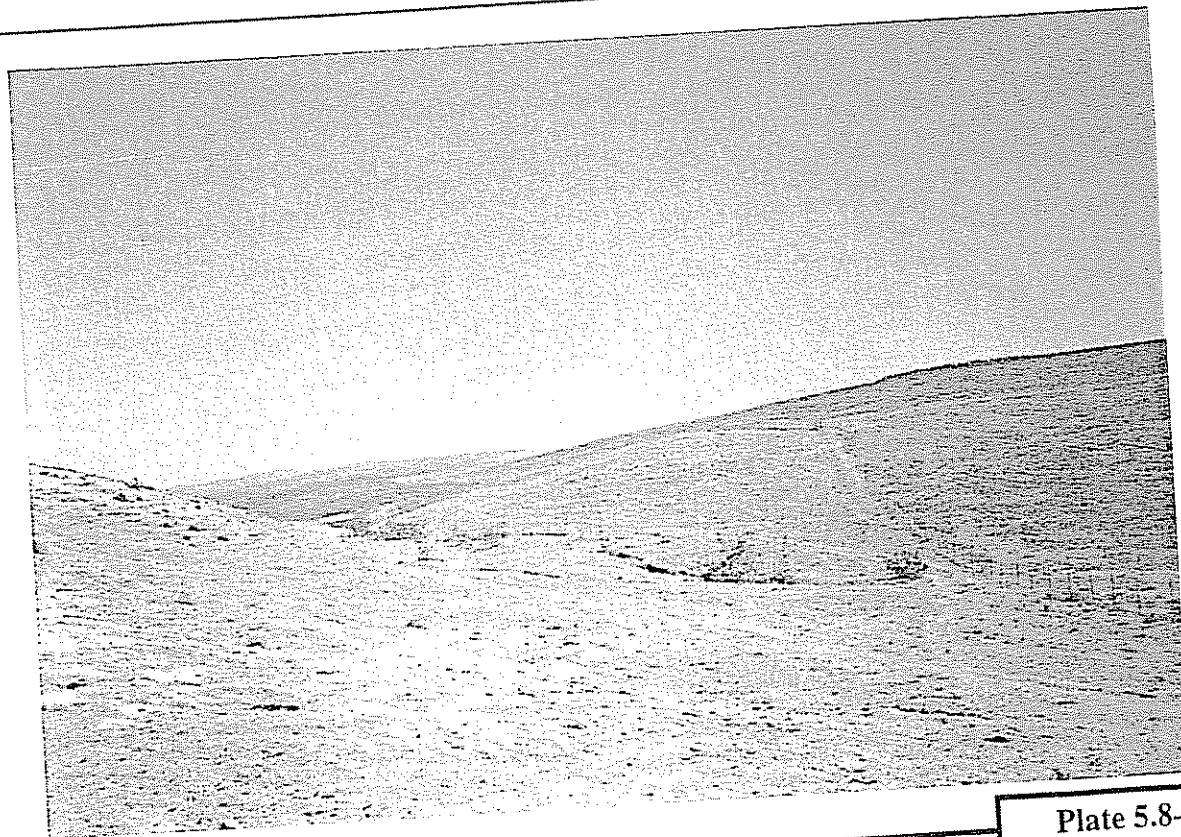


Plate 5.8-1

TABLE 5.8-1

Surface Recovery Data
Site SDI-12,288

Recovery Location	Location from Datum A Azimuth/Range	Quantity/ Weight	Recovery	Description	Cat. No.
1	105°/47 Feet	1	Metate, Uniface, Pecked, Polished	Granite	1
2	78°/313 Feet	4.2 g.	Marine Shell	<i>Chione</i> sp.	2

TABLE 5.8-2Shovel Test Excavation Data
Site SDI-12,288

Shovel Test	Location from Datum A Azimuth/Range	Depth	Recovery
1	92°/48 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
2	80°/109 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
3	77°/181 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
4	76°/245 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
5	78°/321 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
6	77°/375 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
7	262°/25 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
8	11°/93 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
9	55°/216 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
10	64°/320 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery

5.9 SITE SDI-12,291

5.9.1 Site Description

Site SDI-12,291 is a prehistoric site located near the mouth of Wolf Canyon, on the north side of the Otay River floodplain. The site sits on the base of a slope adjacent to Site SDI-11,378, at the junction of Wolf Canyon and Otay Valley. The site has been disturbed, but patches of coastal sage vegetation remain in the otherwise disturbed landscape. The setting of the site is shown in photographs of the site area provided in Plates 5.9-1 and 5.9-2. A dirt road passes along the south side of the site parallel to the Otay River drainage. The dirt road represents the proposed pipeline. The general location of this resource is shown in Figure 5.0-1. The record form for Site SDI-12,291 states that the resource consists of a surface scatter of lithic artifacts, including several tools.

The testing program at SDI-12,291 consisted of the mapping of surface components of the site and the excavation of 17 shovel tests and one test unit. Testing methods and unit sizes were consistent with those discussed in the methodology section (Section 4.0). The field investigations at this site were conducted in August, 2000. All artifacts recovered during the field investigations were subjected to the laboratory analysis procedures described in Section 4.2 of this report.

5.9.2 Description of Field Investigations

The field investigations at SDI-12,291 were conducted using the standard methodologies described in Section 4.1. The site was disturbed by agricultural and grazing activities, as well as the grading of dirt roads through the site as part of the Rock Mountain Quarry operation. The APE for the project passes through the southern side of SDI-12,291, and all field investigations were focused on the general area of potential impact.

Surface Mapping, Recording, and Collection

The surface collection from the site resulted in the recovery of 22 artifacts, all lithic production waste. The locations of the surface artifacts are shown in Figure 5.9-1. The extent of previous impacts has apparently severely disturbed the site, in particular the grading of the dirt road that passes through the site. The surface collection data is summarized in Table 5.9-1 and detailed in Table 5.9-2. The recovered artifacts include seven flakes, five debitage, and ten cores. All of the specimens were derived from metavolcanics. Based on the recovery of surface artifacts, the area of the site within the APE is 350 feet (107 meters) by 40 feet (12 meters).

Subsurface Excavations

The potential for the existence of subsurface deposits at SDI-12,291 was investigated with the excavation of a series of 17 shovel tests. The locations of the tests are shown in Figure 5.9-1. All of these tests were excavated to a minimum depth of 30 centimeters. Only two of the shovel tests were positive, each producing a single metavolcanic flake. The shovel test excavation data is

provided in Table 5.9-3. Based on the surface recovery and the two positive shovel tests, a test unit was also excavated to sample the subsurface component of the site. The location of the unit, illustrated on Figure 5.9-1, was placed near the road which represents the pipeline alignment. The test unit was excavated to a depth of 30 centimeters with three flakes recovered from the 10 to 20 centimeter level (Table 5.9-4). Road gravel was detected from all levels of the test unit, indicating that the portion of the site along the pipeline alignment has been intensively disturbed by grading. A photograph of the test unit is provided in Plate 5.9-2.

5.9.3 Laboratory Analysis

The laboratory analysis for SDI-12,291 included the standard procedures described in Section 4.2 of this report. All of the artifacts recovered from the field investigations conducted at the site were returned to the laboratory to be cleaned as necessary, cataloged, and analyzed. The total collection of cultural materials from SDI-12,291, summarized by provenience in Table 5.9-5, consisted of 27 specimens of lithic production waste (12 flakes, five debitage, and ten cores). No tools or ecofacts were recovered from the site. The analyses which were conducted on the artifacts from Site SDI-12,291 is discussed in the following sections.

Lithic Analysis

The collection of 27 lithic artifacts was entirely lithic production waste. The lithic material distribution of the recovery from the site consisted of five specimens of fine-grained metavolcanics and 22 specimens of medium-grained metavolcanics. All lithic materials recovered from SDI-12,291 are present in the vicinity of the site, confirming that the occupants of this site primarily used locally available sources for lithic material.

5.9.4 Discussion

The testing of SDI-12,291 demonstrated that the surface expression of lithic artifacts was accompanied by a sparse subsurface deposit. This deposit encompasses an area of approximately 2,000 square feet (195 square meters) within the APE, reaching a maximum depth of 30 centimeters. The assessment of the site according to the criteria listed in Section 3.0 (integrity, variability, age, and function) is provided below:

Integrity: SDI-12,291 is characterized as a surface scatter of cultural materials with an associated sparse subsurface deposit. The site area within the pipeline APE has been extensively disturbed by grading of a dirt road that passes through the site. The previous impacts have significantly affected the site's integrity by disturbing the horizontal and vertical association of artifacts. Therefore, its integrity is poor.

- Variability:* The variability of a site consists of the horizontal and vertical separation of cultural materials that represent spatial, temporal, or cultural distinctions. The small quantity of cultural materials, the lack of a substantial subsurface deposit, and the disturbance within the APE indicate that within the pipeline construction corridor, the site does not exhibit a high degree of variability.
- Age:* The age or cultural affiliation of SDI-12,291 could not be satisfactorily determined on the basis of the data collected; no culturally diagnostic artifacts were recovered.
- Function:* The artifacts recovered from SDI-12,291 are indicative of a temporary camp used to process food materials and to manufacture and maintain lithic tools. The function of this site is much the same as the majority of small sites situated along Salt Creek and the Otay River.

5.9.5 Summary

The testing of SDI-12,291 demonstrated that this site consisted of a surface expression of lithic artifacts with a sparse subsurface deposit. The site area within the APE has produced artifacts that indicate the pipeline will pass through a prehistoric temporary camp that is associated with the subsistence pattern of either the Archaic (inland La Jolla Complex) or Late Prehistoric (Kumeyaay Indians) occupations of the area.

5.9.6 Evaluation

The field and laboratory studies conducted for Site SDI-12,291 characterize the site as a surface scatter of cultural materials with a sparse subsurface deposit. The artifact collection consists solely of lithic tool production waste, which indicates that tools were being produced at the site. Artifacts outside of the APE include scrapers and utilized flakes that indicate food resources were being collected and processed at the site. The lack of an intact subsurface deposit, hearth features, and other evidence of extended site occupation suggests that the site was not a permanent camp.

Based on the information derived from the testing program, the site area within the APE is not considered important according to CEQA criteria. Portions of the site located north of the APE may include important components of the site; however, investigations were generally limited to the area in or adjacent to the APE.

5.9.7 Impact Assessment

Site SDI-12,291 was tested because the alignment for the pipeline is tentatively designed to pass within the site boundaries. The pipeline trench is currently designed to stay within the dirt road that passes through the site. Assuming that the trench is kept within the road and associated construction activities will be limited to an area not exceeding 20 feet on either side of the road,

then the potential impacts to SDI-12,291 will be minimal. Because the portion of SDI-12,291 within the APE was evaluated as not important, the impacts to the site within the APE will not be significant.

5.9.8 Native American Heritage Values

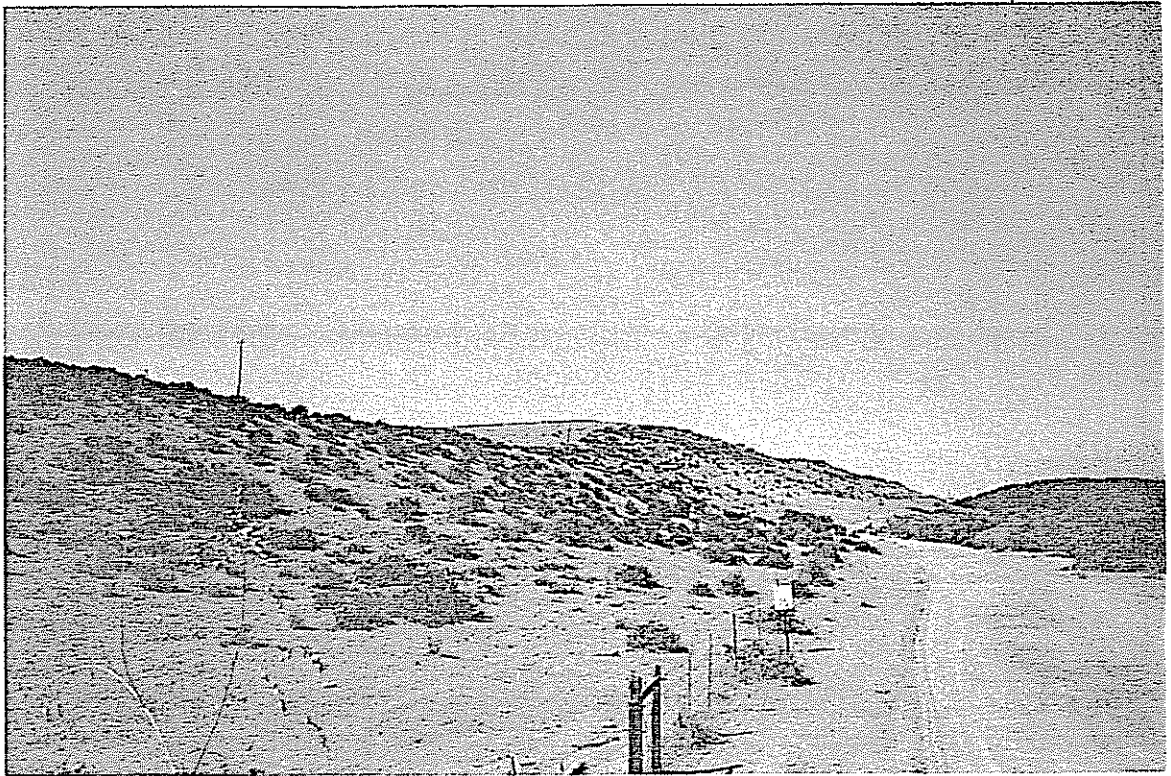
The Native American community was not contacted with regard to this site, as no archaeological materials or remains of special heritage sensitivity to the Native American community were identified at SDI-12,291.

5.9.9 Mitigation Measures

The pipeline construction will impact this site, but no mitigation measures for direct impacts will be necessary. The portion of Site SDI-12,291 within the APE has been determined to be not significant. Therefore, no mitigation measures will be required to reduce the significance of construction impacts. However, because of the potential for elements of the site to be masked or buried within the APE, monitoring of the trench excavation will be necessary. Also, because of the potential for significant components of the site outside of the APE, construction activities must be contained to the APE, and the archaeological monitor will be required to ensure that construction activities will not intrude into any untested portions of SDI-12,291.

Figure 5.9-1
Excavation Location Map — SDI-12,291

**(Deleted for Public Review;
Bound Separately in Confidential Appendix)**

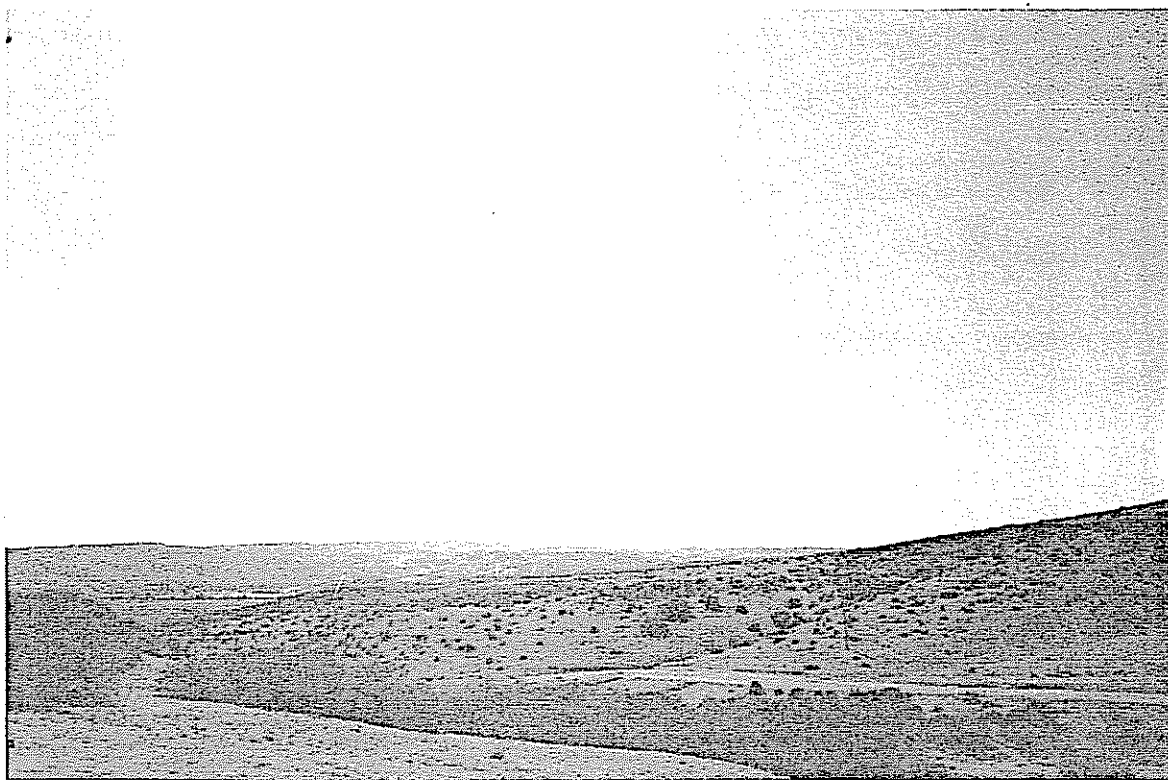


View of Site SDI-12,291, looking north.

View of Site SDI-12,291, looking east.



Plate 5.9-1



View of Site SDI-12,291, looking southwest.

Test Unit 1, 0-30 centimeters, SDI-12,291.

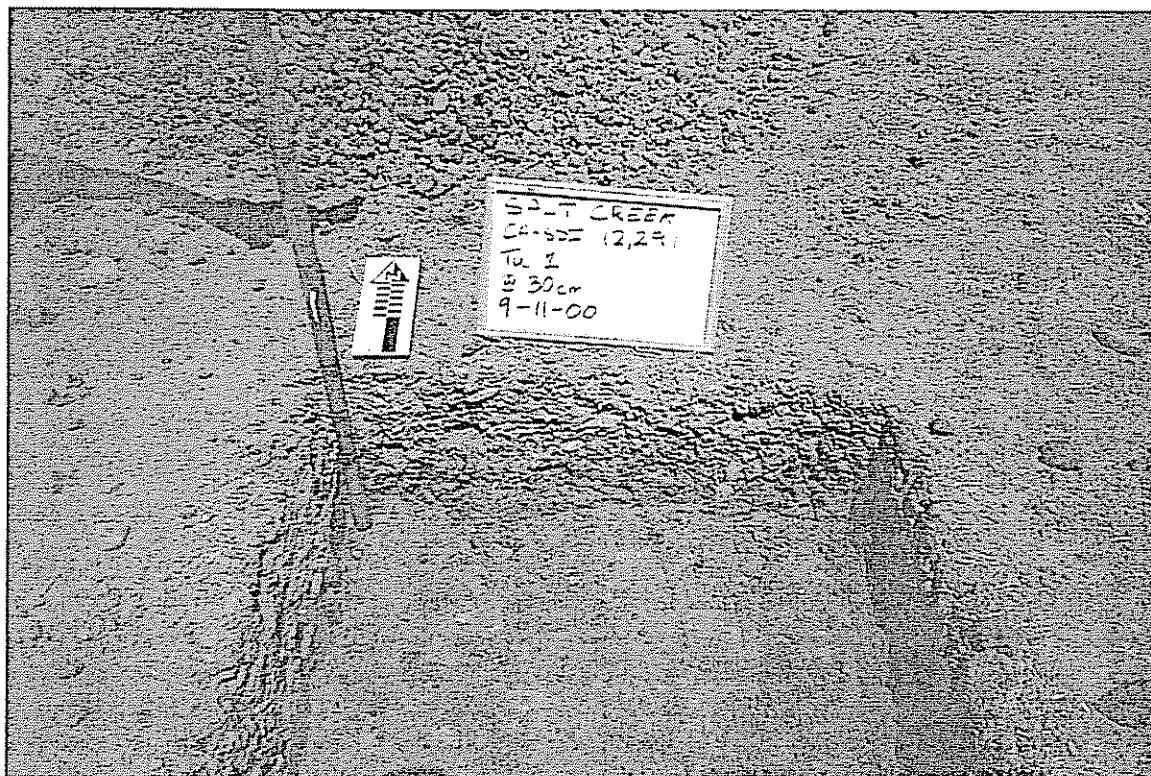


Plate 5.9-2

TABLE 5.9-1Summary of Surface Recovery
Site SDI-12,291

Recovery Category	Quantity	Percent
Lithic Production Waste:		
Cores	10	45.45
Debitage	5	22.73
Flakes	7	31.82
Total	22	100.00

TABLE 5.9-2

Surface Recovery Data
Site SDI-12,291

Recovery Location	Location from Datum B Azimuth/Range	Quantity	Recovery	Material	Cat. No.
1	50°/60 Feet	1	Core	MGM*	1
2	33°/41 Feet	1	Flake	FGM**	2
3	32°/60 Feet	1	Core	MGM	3
		2	Debitage	MGM	4
4	23°/78 Feet	1	Debitage	FGM	5
		1	Core	MGM	6
		2	Debitage	MGM	7
5	13°/121 Feet	1	Core	MGM	8
		1	Flake	MGM	9
6	12°/166 Feet	1	Core	FGM	10
		1	Core Fragment	MGM	11
		1	Flake	MGM	12
7	10°/186 Feet	1	Core	MGM	13
		1	Flake	MGM	14
8	10°/229 Feet	1	Flake	MGM	15
9	16°/184 Feet	1	Core	FGM	16
10	155°/75 Feet	1	Core	MGM	17
11	167°/122 Feet	1	Core	MGM	18
		2	Flakes	MGM	19

*MGM=Medium-Grained Metavolcanic

**FGM=Fine-Grained Metavolcanic

TABLE 5.9-3Shovel Test Excavation Data
Site SDI-12,291

Shovel Test	Location from Datum A Azimuth/Range	Depth	Quantity	Recovery	Material	Cat. No.
1	147°/167 Feet	0-10 cm.		No Recovery		20
		10-20 cm.		No Recovery		21
		20-30 cm.		No Recovery		22
2	139°/195 Feet	0-10 cm.		No Recovery		23
		10-20 cm.		No Recovery		24
		20-30 cm.		No Recovery		25
Shovel Test	Location from Datum B Azimuth/Range	Depth	Quantity	Recovery	Material	Cat. No.
3	185°/328 Feet	0-10 cm.		No Recovery		26
		10-20 cm.		No Recovery		27
		20-30 cm.		No Recovery		28
4	187°/392 Feet	0-10 cm.		No Recovery		29
		10-20 cm.		No Recovery		30
		20-30 cm.		No Recovery		31
5	179°/211 Feet	0-10 cm.		No Recovery		32
		10-20 cm.		No Recovery		33
		20-30 cm.		No Recovery		34
6	185°/277 Feet	0-10 cm.		No Recovery		35
		10-20 cm.		No Recovery		36
		20-30 cm.		No Recovery		37
7	171°/157 Feet	0-10 cm.		No Recovery		38
		10-20 cm.		No Recovery		39
		20-30 cm.		No Recovery		40
8	162°/71 Feet	0-10 cm.		No Recovery		41
		10-20 cm.		No Recovery		42
		20-30 cm.	1	Flake	FGM*	43
		30-40 cm.		No Recovery		44

*Fine-Grained Metavolcanic

Shovel Test	Location from Datum B Azimuth/Range	Depth	Quantity	Recovery	Material	Cat. No.
9	70°/56 Feet	0-10 cm.	1	Flake	MGM**	45
		10-20 cm.		No Recovery		46
		20-30 cm.		No Recovery		47
10	9°/187 Feet	0-10 cm.		No Recovery		48
		10-20 cm.		No Recovery		49
		20-30 cm.		No Recovery		50
11	32°/101 Feet	0-10 cm.		No Recovery		51
		10-20 cm.		No Recovery		52
		20-30 cm.		No Recovery		53
12	157°/59 Feet	0-10 cm.		No Recovery		54
		10-20 cm.		No Recovery		55
		20-30 cm.		No Recovery		56
13	7°/283 Feet	0-10 cm.		No Recovery		57
		10-20 cm.		No Recovery		58
		20-30 cm.		No Recovery		59
14	166°/82 Feet	0-10 cm.		No Recovery		60
		10-20 cm.		No Recovery		61
		20-30 cm.		No Recovery		62
15	76°/52 Feet	0-10 cm.		No Recovery		63
		10-20 cm.		No Recovery		64
		20-30 cm.		No Recovery		65
16	64°/47 Feet	0-10 cm.		No Recovery		66
		10-20 cm.		No Recovery		67
		20-30 cm.		No Recovery		68
17	65°/58 Feet	0-10 cm.		No Recovery		69
		10-20 cm.		No Recovery		70
		20-30 cm.		No Recovery		71

**MGM=Medium-Grained Metavolcanic

TABLE 5.9-4Test Unit Excavation Data
Site SDI-12,291

Test Unit	Location from Datum B Azimuth/Range	Depth	Quantity	Recovery	Material	Cat. No.
1	163°/76 Feet	0-10 cm.		No Recovery		72
		10-20 cm.	3	Flakes	MGM*	73
		20-30 cm.		No Recovery		74

*MGM=Medium-Grained Metavolcanic

TABLE 5.9-5Summary of Artifact Recovery
Site SDI-12,291

Recovery Category	Surface	Shovel Tests	Test Unit	Total	Percent
Lithic Production Waste:					
Cores	10	-	-	10	37.04
Debitage	5	-	-	5	18.52
Flakes	7	2	3	12	44.44
Totals	22	2	3	27	100.00
Percent	81.48	7.41	11.11	100.00	

5.10 SITE SDI-12,293

5.10.1 Site Description

Site SDI-12,293 is a prehistoric site recorded as a lithic scatter located on the north side of the Otay River floodplain, on sloping terraces that overlook the drainage. The slopes of the site are covered in coastal sage vegetation. The setting of the site is shown in a photograph of the site area provided in Plate 5.10–1. The southern portion of the site has been impacted by the grading of the dirt road to the Rock Mountain Quarry, and by sand and gravel mining in the Otay River floodplain. The general location of this resource is shown in Figure 5.0–1.

The testing program at SDI-12,293 consisted of the mapping of the site area and the excavation of 18 shovel tests. Testing methods and unit sizes were consistent with those discussed in the methodology section (Section 4.0). The field investigations at this site were conducted in August, 2000.

5.10.2 Description of Field Investigations

The field investigations at SDI-12,293 were conducted using the standard methodologies described in Section 4.1. The site has been disturbed by the grading of the dirt road which passes on the north side of the Otay River floodplain. The dirt road represents the pipeline corridor, and the potential to discover any elements of SDI-12,293 within the APE was remote. The APE for the project passes through the southern most side of SDI-12,293, and all field investigations were focused on the general area of potential impact.

Surface Mapping, Recording, and Collection

While surface artifacts were observed just outside of the APE, no artifacts could be located within the APE. Certainly, the APE passes through a portion of the site that would be expected to include artifacts associated with the occupation of the site; however, previous impacts appear to have scraped or disturbed the lower slopes of the terrace, where the southern portion of the site is situated. These impacts have removed evidence of the prehistoric use of the site at this location. No surface artifacts were identified within the APE.

Subsurface Excavations

The potential for the existence of subsurface deposits at SDI-12,293 was investigated with the excavation of a series of 18 shovel tests. The locations of the tests are shown in Figure 5.10–1. All of these tests were excavated to a minimum depth of 30 centimeters, unless compacted, culturally sterile soil or bedrock was encountered. All of the 18 shovel tests were negative, producing no evidence of cultural materials. The shovel test excavations are detailed in Table 5.10–1.

5.10.3 Laboratory Analysis

The laboratory analysis for SDI-12,293 was not necessary, as no artifacts were recovered during the field investigation.

5.10.4 Discussion

The testing of SDI-12,293 demonstrated that the portion of the site that was located within the APE has been intensely disturbed at some time in the past, and no evidence of any prehistoric materials remains within the APE. The assessment of the site according to the criteria listed in Section 3.0 (integrity, variability, age, and function) is provided below:

- Integrity: Within the APE, SDI-12,293 is characterized as a very disturbed resource. Impacts to the site have removed all evidence of the prehistoric use of the site. Therefore, its integrity is poor.
- Variability: Within the APE, no cultural materials were observed, and, therefore, the site does not exhibit a high degree of variability.
- Age: The age or cultural affiliation of SDI-12,293 could not be satisfactorily determined on the basis of the data collected; no culturally diagnostic artifacts were recovered.
- Function: The data recorded in the site forms, combined with observations at SDI-12,293, suggest the site was a temporary camp used to process food materials and to manufacture and maintain lithic tools. The function of this site is much the same as the majority of small sites situated along Salt Creek and the Otay River.

5.10.5 Summary

The testing of SDI-12,293 demonstrated that this site no longer exists within the APE. The site itself was a prehistoric temporary camp that is associated with the subsistence pattern of either the Archaic (inland La Jolla Complex) or Late Prehistoric (Kumeyaay Indians) occupations of the area.

5.10.6 Evaluation

The field study conducted for Site SDI-12,293 characterize the site as a very disturbed resource. Based on the information derived from the testing program, the site area within the APE is not considered important according to CEQA criteria. Portions of the site located north of the APE may include important components of the site; however, investigations were generally limited to the area in or adjacent to the APE.

5.10.7 Impact Assessment

Site SDI-12,293 was tested because the alignment for the Salt Creek Sewer Project is tentatively designed to pass along the southern side of the site. Assuming that the trench is kept within the road and associated construction activities will be limited to an area not exceeding 20 feet on either side of the road, then the potential impacts to SDI-12,293 will be minimal. Because the portion of SDI-12,293 within the APE was evaluated as not important, the impacts to the site within the APE will not be significant.

5.10.8 Native American Heritage Values

The Native American community was not contacted with regard to this site, as no archaeological materials or remains of special heritage sensitivity to the Native American community were identified at SDI-12,293.

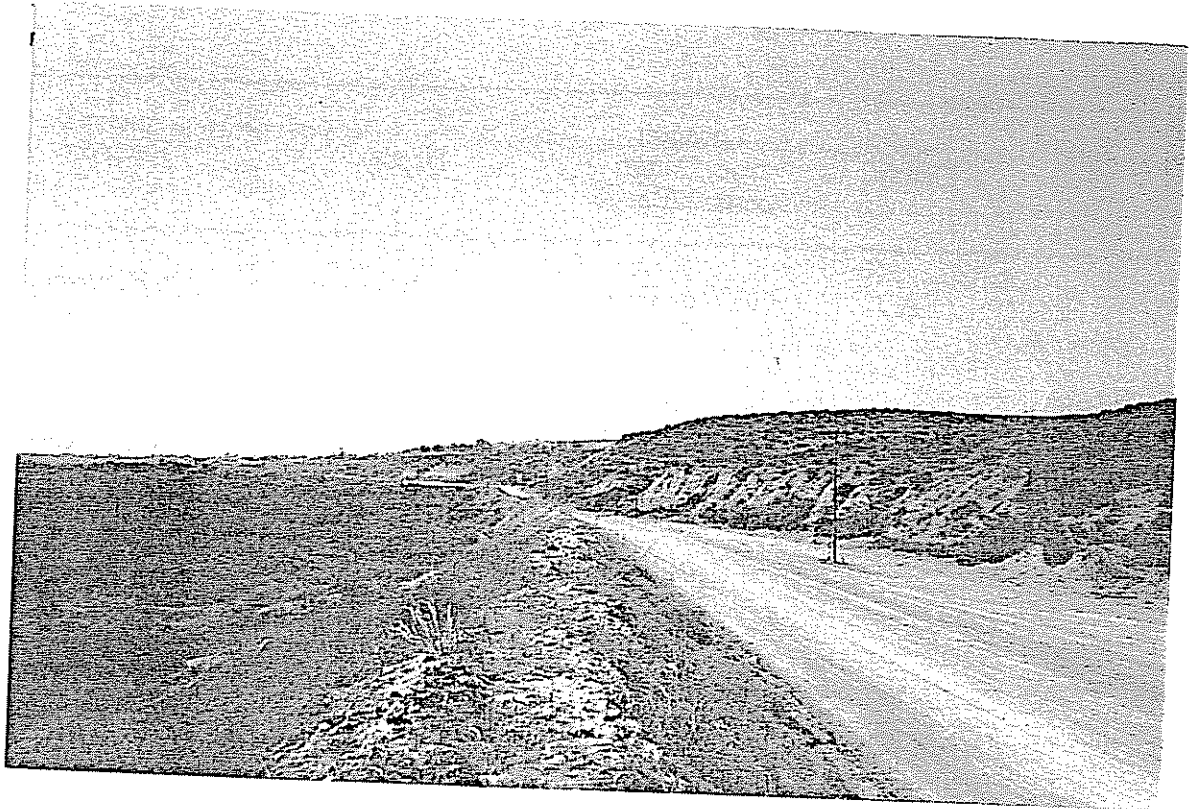
5.10.9 Mitigation Measures

The pipeline construction will impact this site, but no mitigation measures for direct impacts will be necessary. The portion of Site SDI-12,293 within the APE has been determined to be not significant. Therefore, no mitigation measures will be required to reduce the significance of construction impacts. However, because of the potential for elements of the site to be masked or buried within the APE, monitoring of the trench excavation will be necessary. Also, because of the potential for significant components of the sites outside of the APE, construction activities must be contained to the APE, and the archaeological monitor will be required to ensure that construction activities will not intrude into any untested portions of SDI-12,293.

Figure 5.10-1

Excavation Location Map — SDI-12,293

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Bound Separately in Confidential Appendix)**



View of Site SDI-12,293, looking west.

TABLE 5.10-1Shovel Test Excavation Data
Site SDI-12,293

Shovel Test	Datum	Location from Datum Azimuth/Range	Depth	Recovery
1	A	116°/164 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
2	A	168°/41 Feet	0-10 cm. 10-20 cm.	No Recovery No Recovery
3	A	257°/70 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
4	A	276°/166 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
5	A	283°/233 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
6	A	283°/300 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
7	A	291°/438 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
8	A	292°/640 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
9	A	290°/641 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
10	B	112°/464 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery

Shovel Test	Datum	Location from Datum Azimuth/Range	Depth	Recovery
11	B	112°/398 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
12	B	112°/307 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
13	B	111°/111 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
14	B	115°/58 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
15	B	273°/24 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
16	B	270°/127 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
17	B	268°/171 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
18	A	287°/371 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery

5.11 SITE SDI-12,809

5.11.1 Site Description

Site SDI-12,809 is a major prehistoric village site situated along the north bank of the Otay River, between the Wolf Canyon and Salt Creek Canyon drainages. The site sits on a series of terraces cut by the river and stretches nearly 6,000 feet parallel to the river course. This site has been studied in the past by a field school sponsored by Southwestern College and directed by C. McGowan during the late 1970s (site form). Over several years, the field school excavated numerous test pits that yielded a substantial quantity of cultural materials, including evidence of both Archaic and Late Prehistoric occupations. The material evidence extracted or reported from the site includes a variety of projectile points, scrapers and other precision tools, lithic production waste, trade material (obsidian and Colorado River Buff Ware ceramics), shell, fish bone, a variety of faunal remains, beads and pendants, and large quantities of ground stone tools. The setting of the site is shown in photographs of the site area provided in Plate 5.11-1. The long southern boundary of the site has been impacted in the past by the grading of a dirt road that passes along the north side of the Otay River and by the sand and gravel mining of the flood plain. The significant portion of the site sits directly above the graded dirt road. The APE for the project follows this dirt road, and the edges of the APE cover the southern fringe of SDI-12,809. The general location of this resource is shown in Figure 5.0-1.

The testing program at SDI-12,809 consisted of the mapping and recovery of surface artifacts, and the excavation of 44 shovel tests and two test units. Testing methods and unit sizes were consistent with those discussed in the methodology section (Section 4.0). The field investigations at this site were conducted in August, 2000. All artifacts recovered during the field investigations were subjected to the laboratory analysis procedures described in Section 4.2 of this report.

5.11.2 Description of Field Investigations

The field investigations at SDI-12,809 were conducted using the standard methodologies described in Section 4.1. The site was disturbed by agricultural and grazing activities over the past 100 years, as well as the grading of a dirt road through the south side of the site and the mining activities within the floodplain area of the site. The APE for the project passes through the southern most side of SDI-12,809, and all field investigations were focused on the general area of potential impact.

Surface Mapping, Recording, and Collection

The locations from which surface artifacts were recovered at SDI-12,809 are shown in Figures 5.11-1A through 5.11-1E. The locations of the surface artifacts were recorded to establish the boundaries of the site within the APE. Based upon the surface recovery data, the area of the site within the APE measures approximately 7,000 feet (2,133 meters) from west to east

and 40 feet (12 meters) from south to north, covering an area of approximately 280,000 square feet (25,596 square meters). The total dimensions of the site were not established as part of this study.

The surface collection is summarized in Table 5.11-1, and a complete list of the individual surface artifacts and provenience information is provided in Table 5.11-2. The 226 surface locations at SDI-12,809 yielded a total of 696 artifacts, consisting of ground stone tools, percussion tools, precision tools, ceramics, and marine shell. The collection was dominated by lithic production waste, which accounted for 83.48% (N=581), followed by precision tools, representing 8.62% (N=60). The balance of the collection consisted of ground stone tools (N=8; 1.15% of total), percussion tools (N=30; 4.31% of total), and multi-use tools (N=11; 1.58% of the total). Six potsherds of Tizon Brown Ware were also collected from the site. The pattern of artifacts indicated that the majority of materials were present towards the western half of the site, which corresponds with the area where Southwestern College conducted the field school excavations. Most of the artifacts were recovered from the slopes of the terrace along the north side of the dirt road running on the southern boundary of the site.

Subsurface Excavations

The potential for the existence of subsurface deposits at SDI-12,809 was investigated with the excavation of a series of 44 shovel tests. The locations of the tests are shown in Figures 5.11-1A through 5.11-1E. All of these tests were excavated to a minimum depth of 30 centimeters. Of the 44 shovel tests excavated, nine were positive (yielded cultural materials). The shovel test excavations, summarized in Table 5.11-3 and detailed in Table 5.11-4, resulted in the recovery of 17 flakes and four pieces of debitage. Of the 21 artifacts recovered, 11 specimens were recovered from Shovel Test Pit 4. Of the remaining eight positive shovel tests, two produced two flakes, and six produced only one flake or debitage. The maximum depth of artifact recovery was 30 centimeters. The nine positive shovel tests indicated that the potential exists for subsurface deposits within the APE at SDI-12,809. While these tests did result in some recovery, the quantity of materials was very small, and the few positive tests were located on the north edge of the APE near the upper slope of the terrace above the dirt road.

To further test for a subsurface component of the site, two standard test units were also excavated. The locations of the units are shown in Figure 5.11-1. Test Unit 1 was excavated to a depth of 40 centimeters, with artifacts recovered to a depth of 30 centimeters, and Test Unit 2 was excavated to a depth of 30 centimeters, with artifacts recovered to 20 centimeters. A total of 96 artifacts were recovered from the test units, 79 specimens from Test Unit 1 and 17 from Test Unit 2. The results of the test unit excavation have been presented in Table 5.11-5 and summarized in Table 5.11-6. The recovery from the units was dominated by lithic production waste, which accounted for 97.92% (N=94) of the total test unit collection. The remaining 2.08% (N=2) from the test units consisted of two hammer/cores. The test units were excavated through very consolidated, rocky soil. Views of Test Unit 1 and Test Unit 2 are provided in Plate 5.11-2. The subsurface tests generally indicated, that within the APE, minimal cultural material was present,

although most of the positive tests were located on the northern edge of the APE.

5.11.3 Laboratory Analysis

The laboratory analysis for SDI-12,809 included the standard procedures described in Section 4.2 of this report. All of the artifacts recovered from the field investigations conducted at the site were returned to the laboratory to be cleaned as necessary, cataloged, and analyzed. The total collection of cultural materials from SDI-12,809, summarized by provenience in Table 5.11-7, consisted of 813 specimens. The analyses which were conducted on the artifacts from Site SDI-12,809 is discussed in the following sections. The artifact catalog for Site SDI-12,809 is provided in Appendix I.

Lithic Analysis

The collection of 807 lithic artifacts was dominated by lithic production waste, which accounted for 85.61% (N=696) of the collection. The remainder of the collection consisted of ground stone tools, which comprised 0.98% (N=8), and percussion (N=30; 3.69% of total) and precision tools (N=60; 7.43% of the total). The balance of the lithic recovery consisted of 13 multi-use tools, which were all hammer/cores.

The lithic material distribution of the recovery from the site is summarized in Table 5.11-8. Metavolcanic rock dominated the lithic material types, with basalt, or medium-grained metavolcanic rock representing 72.24% (N=583) of the total and felsite, or fine-grained metavolcanic rock, accounting for 25.28% (N=204) of the lithic collection. The metavolcanic materials in the collection combined to represent 97.52% of the lithic material distribution. The remaining 2.48% of the lithic materials consisted of granite (1.12%, N=9), quartzite (0.99%, N=8), and chalcedony, chert, and quartz, each of which was represented by one specimen. With the exception of chert and chalcedony, all other lithic materials are present near the project area.

5.11.4 Discussion

The testing of SDI-12,809 demonstrated that the surface expression of lithic artifacts was accompanied by a sparse subsurface deposit within the northern portion of the APE. This deposit reaches a maximum depth of 30 centimeters. The assessment of the site according to the criteria listed in Section 3.0 (integrity, variability, age, and function) is provided below:

Integrity: SDI-12,809 is characterized as a major prehistoric village complex; however, within the APE, the site is described as a surface scatter of cultural materials with an associated sparse subsurface deposit. The site area within the APE has been disturbed by grading of a dirt road that passes through the site and sand and gravel mining in the past. The previous impacts have significantly affected the site's integrity by removing portions of the site along the southern boundary. Within the APE, the site integrity is rated as poor; however, intact

significant components of the site can be found within 50 feet of the north side of the APE.

Variability: The variability of a site consists of the horizontal and vertical separation of cultural materials that represent spatial, temporal, or cultural distinctions. The cultural materials from the site demonstrate a high level of artifact variability, although this trend is not continued in the subsurface materials collected during this program. The subsurface category was limited to lithic production waste. Within the APE, the surface collection represents a moderate degree of variability; however the overall prehistoric site variability within the APE is lessened due to the minimal subsurface recovery.

Age: The age or cultural affiliation of SDI-12,809 could not be satisfactorily determined on the basis of the data collected; however, information presented in other documents for this site indicate that the occupation included a Late Archaic Period, as well as the Late Prehistoric Horizon. The site appears to have been occupied for three to four thousand years.

Function: The artifacts recovered from SDI-12,809 are indicative of a semi-permanent camp where prehistoric people focused their activities upon tool manufacture, food collection and processing, pottery manufacture and use, and foraging forays from the coast to the foothill areas.

5.11.5 Summary

The testing of SDI-12,809 demonstrated that while this site is registered as a major occupation site, the area within the APE consisted of a moderate surface expression of lithic artifacts with a sparse subsurface deposit. The cultural materials were spread over a very large area, paralleling the dirt road to be used for the pipeline alignment. The site area within the APE has produced artifacts that indicate the pipeline will pass through a portion of the prehistoric camp that is associated with the subsistence pattern of the Archaic (inland La Jolla Complex) and Late Prehistoric (Kumeyaay Indians) occupations of the area.

5.11.6 Evaluation

The field and laboratory studies conducted for a portion of Site SDI-12,809 characterize the site as a surface scatter of cultural materials with a sparse subsurface deposit. The lack of a deep midden, hearth features, and other evidence of extended site occupation suggests that the portion of the site within the APE is not important. However, the recovered artifacts demonstrate that this area is connected to the permanent camp located north of the APE, but disturbances to the south portion of the site has destroyed any research potential within the APE. Based on the information derived from the testing program, the site area within the APE is not considered important according to CEQA criteria. Portions of the site located north of the APE include important

components of the site; however, investigations were generally limited to the area in or adjacent to the APE.

5.11.7 Impact Assessment

Site SDI-12,809 was tested because the alignment for the Salt Creek Sewer Project is tentatively designed to pass within the site boundaries. The pipeline trench is currently designed to stay within the dirt road that passes along the southern boundary of the site. Assuming that the trench is kept within the road and associated construction activities will be limited to an area not exceeding 20 feet on either side of the road, then the potential impacts to SDI-12,809 will be minimal. Because the portion of SDI-12,809 within the APE was evaluated as not important, the impacts to the site within the APE will not be significant.

5.11.8 Native American Heritage Values

The Native American community was not contacted with regard to this site, as no archaeological materials or remains of special heritage sensitivity to the Native American community were identified at SDI-12,809.

5.11.9 Mitigation Measures

The pipeline construction will impact this site, but no mitigation measures for direct impacts will be necessary. The portion of Site SDI-12,809 within the APE has been determined to be not significant. Therefore, no mitigation measures will be required to reduce the significance of construction impacts. However, because of the potential for elements of the site to be masked or buried within the APE, monitoring of the trench excavation will be necessary. Also, because of the potential for significant components of the site outside of the APE, construction activities must be contained to the APE, and the archaeological monitor will be required to ensure that construction activities will not intrude into any untested portions of SDI-12,809.

Figure 5.11-1A

Excavation Location Map — SDI-12,809

**(Deleted for Public Review;
Bound Separately in Confidential Appendix)**

Figure 5.11-1B

Excavation Location Map — SDI-12,809

**(Deleted for Public Review;
Bound Separately in Confidential Appendix)**

Figure 5.11-1C
Excavation Location Map — SDI-12,809
(Deleted for Public Review;
Bound Separately in Confidential Appendix)

Figure 5.11-1C

Excavation Location Map — SDI-12,809

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Bound Separately in Confidential Appendix)**

Figure 5.11-1D

Excavation Location Map — SDI-12,809

**(Deleted for Public Review;
Bound Separately in Confidential Appendix)**

Figure 5.11-1E

Excavation Location Map — SDI-12,809

**(Deleted for Public Review;
Bound Separately in Confidential Appendix)**

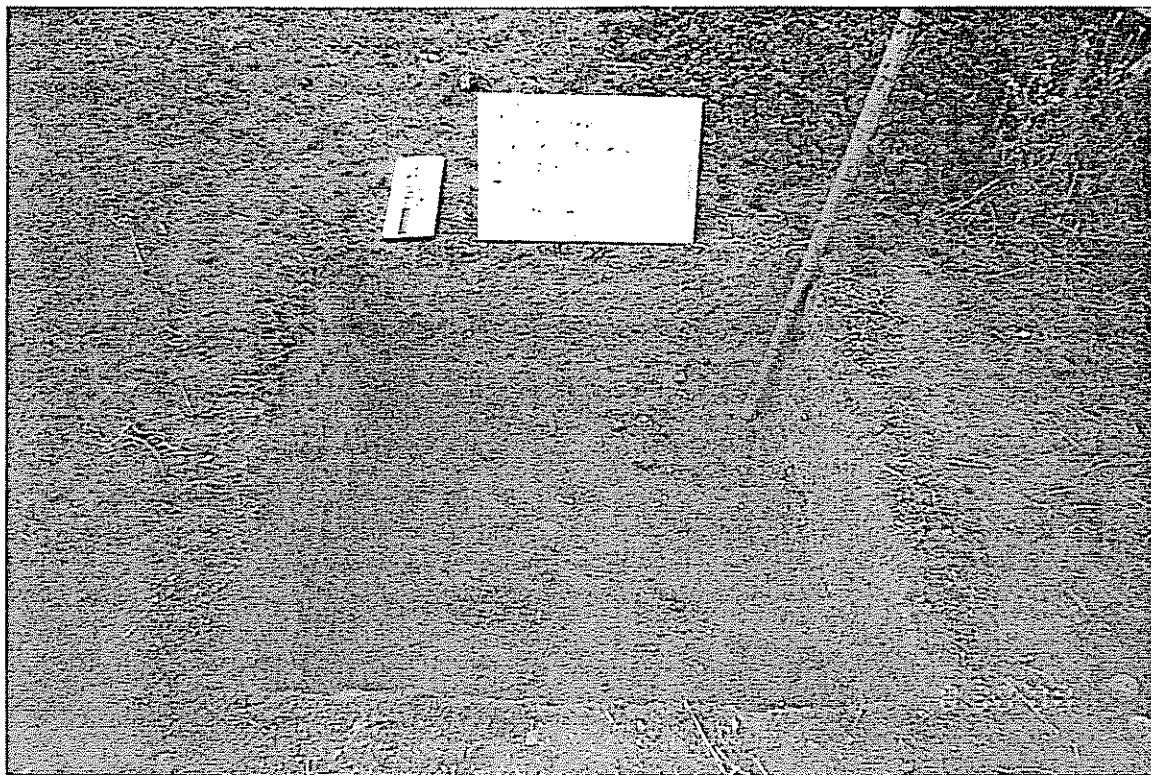


View of Site SDI-12,809, looking west.

View of Site SDI-12,809, looking east.

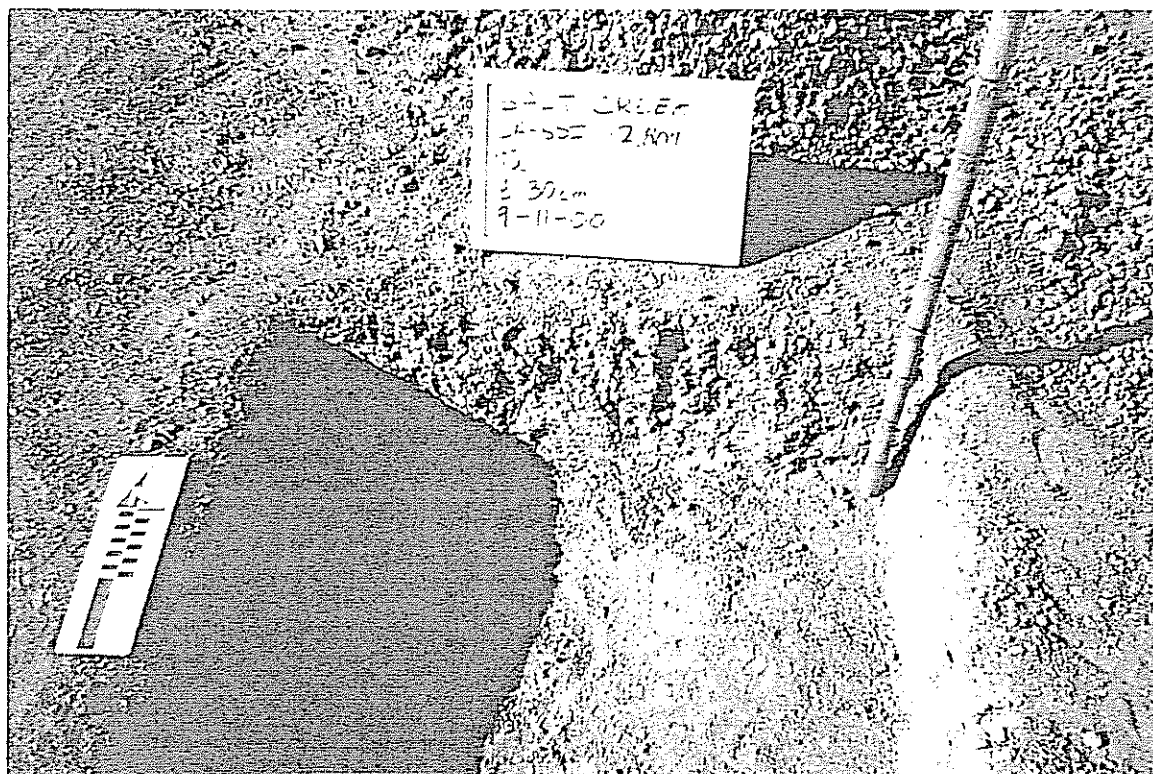


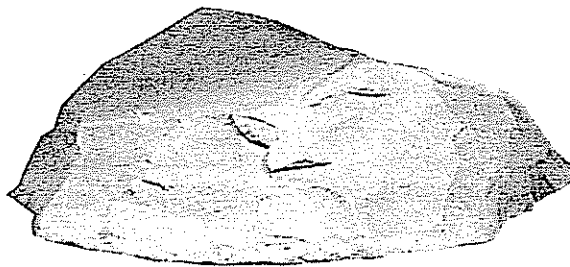
Plate 5.11-1



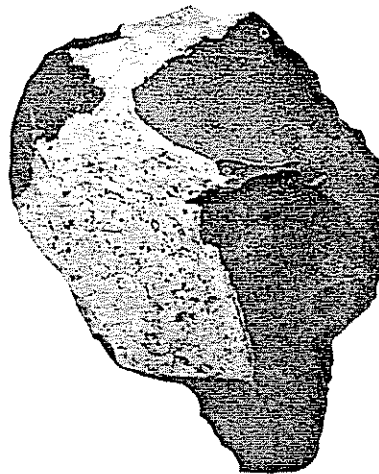
Test Unit 1, 0 to 40 centimeters, SDI-12,809.

Test Unit 2, 0 to 30 centimeters, SDI-12,809.





Flake
Scraper
Cat. # 94



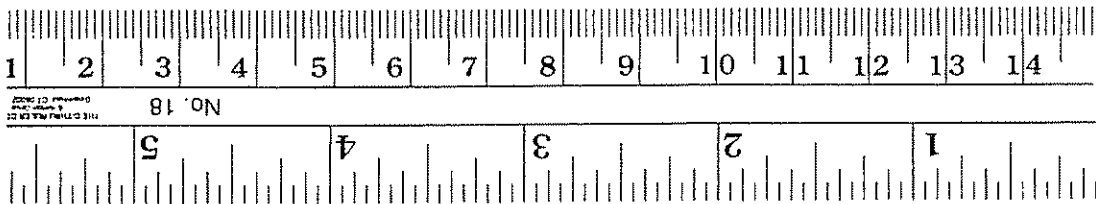
Flake
Scraper
Cat. # 32



Hammerstone
Cat. # 80



Flake
Scraper
Cat. # 36



Selected Artifacts from SD1-12,809.

Plate 5.11-3

TABLE 5.11-1Summary of Surface Recovery
Site SDI-12,809

Recovery Category	Quantity	Percent
Ecofacts:		
Marine Shell,		
<i>Laevicardium</i> sp.	22.5 g.	
Unidentifiable	0.2 g.	
Ground Stone Tools:		
Manos	6	0.86
Metates	2	0.29
Lithic Production Waste:		
Cores	59	8.48
Debitage	205	29.45
Flakes	315	45.26
Tested Cobbles	2	0.29
Percussion Tools:		
Chopper	1	0.14
Hammerstones	29	4.17
Precision Tools:		
Retouched Debitage	11	1.58
Retouched Flakes	32	4.60
Scrapers	6	0.86
Utilized Debitage	2	0.29
Utilized Flakes	9	1.29
Multi-Use Tools:		
Hammer/Cores	11	1.58
Pottery:		
Potsherds, TBW*	6	0.86
Total	696	100.00

Table 5.11-2
Surface Recovery Data — SDI-12,809

Placed in Appendix II

TABLE 5.11-3Summary of Shovel Test Recovery
Site SDI-12,809

Recovery Category	Quantity	Percent
Lithic Production Waste:		
Debitage	4	19.05
Flakes	17	80.95
Total	21	100.00

TABLE 5.11-4Shovel Test Excavation Data
Site SDI-12,809

Shovel Test	Datum	Location from Datum Azimuth/Range	Depth	Quantity	Recovery	Material	Cat. No.
1	B	33°/283 Feet	0-10 cm.	2	Flakes	FGM*	485
			10-20 cm.		No Recovery		486
			20-30 cm.		No Recovery		487
2	B	28°/189 Feet	0-10 cm.		No Recovery		488
			10-20 cm.	1	Flake	MGM**	489
			20-30 cm.		No Recovery		490
3	B	299°/89 Feet	0-10 cm.		No Recovery		491
			10-20 cm.		No Recovery		492
			20-30 cm.		No Recovery		493
4	B	359°/97 Feet	0-10 cm.	1	Flake	FGM	494
				1	Debitage	MGM	495
				2	Flakes	MGM	496
			10-20 cm.	1	Flake	FGM	497
				1	Debitage	MGM	498
				5	Flakes	MGM	499
			20-30 cm.		No Recovery		500
			30-40 cm.		No Recovery		501
5	B	42°/428 Feet	0-10 cm.		No Recovery		502
			10-20 cm.		No Recovery		503
			20-30 cm.		No Recovery		504
6	B	303°/67 Feet	0-10 cm.		No Recovery		505
			10-20 cm.		No Recovery		506
			20-30 cm.		No Recovery		507
7	B	43°/497 Feet	0-10 cm.		No Recovery		508
			10-20 cm.		No Recovery		509
			20-30 cm.		No Recovery		510

*FGM=Fine-Grained Metavolcanic

**MGM=Medium-Grained Metavolcanic

Shovel Test	Datum	Location from Datum Azimuth/Range	Depth	Quantity	Recovery	Material	Cat. No.
8	B	268°/138 Feet	0-10 cm.		No Recovery		511
			10-20 cm.		No Recovery		512
			20-30 cm.		No Recovery		513
9	B	44°/562 Feet	0-10 cm.		No Recovery		514
			10-20 cm.		No Recovery		515
			20-30 cm.		No Recovery		516
10	B	268°/239 Feet	0-10 cm.		No Recovery		517
			10-20 cm.		No Recovery		518
			20-30 cm.		No Recovery		519
11	B	46°/623 Feet	0-10 cm.		No Recovery		520
			10-20 cm.		No Recovery		521
			20-30 cm.		No Recovery		522
12	B	261°/310 Feet	0-10 cm.		No Recovery		523
			10-20 cm.		No Recovery		524
			20-30 cm.		No Recovery		525
13	B	48°/689 Feet	0-10 cm.		No Recovery		526
			10-20 cm.		No Recovery		527
			20-30 cm.		No Recovery		528
14	B	259°/385 Feet	0-10 cm.	1	Flake	MGM	529
			10-20 cm.		No Recovery		530
			20-30 cm.		No Recovery		531
15	B	50°/761 Feet	0-10 cm.		No Recovery		532
			10-20 cm.		No Recovery		533
			20-30 cm.		No Recovery		534
16	B	256°/517 Feet	0-10 cm.		No Recovery		535
			10-20 cm.	1	Flake	FGM	536
			20-30 cm.	1	Debitage	MGM	537
			30-40 cm.		No Recovery		538

Shovel Test	Datum	Location from Datum Azimuth/Range	Depth	Quantity	Recovery	Material	Cat. No.
17	B	51°/826 Feet	0-10 cm.		No Recovery		539
			10-20 cm.		No Recovery		540
			20-30 cm.		No Recovery		541
18	B	257°/583 Feet	0-10 cm.		No Recovery		542
			10-20 cm.		No Recovery		543
			20-30 cm.		No Recovery		544
19	C	298°/57 Feet	0-10 cm.		No Recovery		545
			10-20 cm.		No Recovery		546
			20-30 cm.		No Recovery		547
20	B	256°/617 Feet	0-10 cm.		No Recovery		548
			10-20 cm.		No Recovery		549
			20-30 cm.		No Recovery		550
21	C	271°/110 Feet	0-10 cm.		No Recovery		551
			10-20 cm.		No Recovery		552
			20-30 cm.		No Recovery		553
22	B	255°/670 Feet	0-10 cm.		No Recovery		554
			10-20 cm.		No Recovery		555
			20-30 cm.		No Recovery		556
23	C	264°/177 Feet	0-10 cm.	1	Debitage	MGM	557
			10-20 cm.		No Recovery		558
			20-30 cm.		No Recovery		559
24	C	261°/372 Feet	0-10 cm.	1	Flake	MGM	560
			10-20 cm.		No Recovery		561
			20-30 cm.		No Recovery		562
25	G	262°/713 Feet	0-10 cm.		No Recovery		563
			10-20 cm.		No Recovery		564
			20-30 cm.		No Recovery		565
26	C	262°/625 Feet	0-10 cm.		No Recovery		566

Shovel Test	Datum	Location from Datum Azimuth/Range	Depth	Quantity	Recovery	Material	Cat. No.
26	C	262°/625 Feet	10-20 cm.		No Recovery		567
			20-30 cm.		No Recovery		568
27	G	263°/464 Feet	0-10 cm.		No Recovery		569
			10-20 cm.		No Recovery		570
			20-30 cm.		No Recovery		571
28	D	33°/128 Feet	0-10 cm.		No Recovery		572
			10-20 cm.		No Recovery		573
			20-30 cm.		No Recovery		574
29	G	268°/240 Feet	0-10 cm.		No Recovery		575
			10-20 cm.		No Recovery		576
			20-30 cm.		No Recovery		577
30	D	260°/253 Feet	0-10 cm.	1	Flake	MGM	578
			10-20 cm.		No Recovery		579
			20-30 cm.		No Recovery		580
31	G	255°/95 Feet	0-10 cm.		No Recovery		581
			10-20 cm.		No Recovery		582
			20-30 cm.		No Recovery		583
32	E	228°/502 Feet	0-10 cm.		No Recovery		584
			10-20 cm.		No Recovery		585
			20-30 cm.		No Recovery		586
33	F	274°/250 Feet	0-10 cm.		No Recovery		587
			10-20 cm.		No Recovery		588
			20-30 cm.		No Recovery		589
34	D	252°/570 Feet	0-10 cm.	1	Flake	FGM	590
			10-20 cm.		No Recovery		591
			20-30 cm.		No Recovery		592
35	F	36°/183 Feet	0-10 cm.		No Recovery		593
			10-20 cm.		No Recovery		594

Shovel Test	Datum	Location from Datum Azimuth/Range	Depth	Quantity	Recovery	Material	Cat. No.
35	F	36°/183 Feet	20-30 cm.		No Recovery		595
36	D	242°/855 Feet	0-10 cm.		No Recovery		596
			10-20 cm.		No Recovery		597
			20-30 cm.		No Recovery		598
37	E	103°/45 Feet	0-10 cm.		No Recovery		599
			10-20 cm.		No Recovery		600
			20-30 cm.		No Recovery		601
38	D	238°/1077 Feet	0-10 cm.		No Recovery		602
			10-20 cm.		No Recovery		603
			20-30 cm.		No Recovery		604
39	D	235°/1280 Feet	0-10 cm.		No Recovery		605
			10-20 cm.		No Recovery		606
			20-30 cm.		No Recovery		607
40	D	236°/1178 Feet	0-10 cm.		No Recovery		608
			10-20 cm.		No Recovery		609
			20-30 cm.		No Recovery		610
41	B	33°/279 Feet	0-10 cm.		No Recovery		611
			10-20 cm.		No Recovery		612
			20-30 cm.		No Recovery		613
42	B	33°/293 Feet	0-10 cm.		No Recovery		614
			10-20 cm.		No Recovery		615
			20-30 cm.		No Recovery		616
43	B	256°/519 Feet	0-10 cm.		No Recovery		617
			10-20 cm.		No Recovery		618
			20-30 cm.		No Recovery		619
44	B	258°/521 Feet	0-10 cm.		No Recovery		620
			10-20 cm.		No Recovery		621
			20-30 cm.		No Recovery		622

TABLE 5.11-5Summary of Test Unit Recovery
Site SDI-12,809

Artifact Category	<u>Depth (in centimeters)</u>			Total	Percent
	0-10	10-20	20-30		
Lithic Production Waste:					
Debitage	10	6	11	27	28.13
Flakes	30	32	5	67	69.79
Multi-Use Tools:					
Hammer/Cores	-	1	1	2	2.08
Totals	40	39	17	96	100.00
Percent	41.67	40.63	17.71	100.00	

TABLE 5.11-6Test Unit Excavation Data
Site SDI-12,809

Test Unit	Location from Datum B Azimuth/Range	Depth	Quantity	Recovery	Material	Cat. No.
1	359°/97 Feet	0-10 cm.	4	Flakes	FGM*	623
			9	Debitage	MGM**	624
			20	Flakes	MGM	625
		10-20 cm.	1	Debitage	FGM	626
			4	Flakes	FGM	627
			1	Hammer/Core, Circular	MGM	628
			4	Debitage	MGM	629
			19	Flakes	MGM	630
		20-30 cm.	2	Debitage	FGM	631
			1	Hammer/Core, Single-Edged	MGM	632
			9	Debitage	MGM	633
			5	Flakes	MGM	634
		30-40 cm.	No Recovery			635
2	258°/525 Feet	0-10 cm.	1	Debitage	FGM	636
			6	Flakes	FGM	637
		10-20 cm.	8	Flakes	FGM	638
			1	Debitage	MGM	639
			1	Flake	MGM	640
		20-30 cm.	No Recovery			641

*FGM-Fine-Grained Metavolcanic

**MGM=Medium-Grained Metavolcanic

TABLE 5.11-7Summary of Artifact Recovery
Site SDI-12,809

Recovery Category	Surface	Shovel Tests	Test Units	Total	Percent
Ecofacts:					
Marine Shell,					
<i>Laevicardium</i> sp.	22.5 g.	-	-	22.5 g.	
Unidentifiable*	0.2 g.	-	-	0.2 g.	
Ground Stone Tools:					
Manos	6	-	-	6	0.74
Metates	2	-	-	2	0.25
Lithic Production Waste:					
Cores	59	-	-	59	7.26
Debitage	205	4	27	236	29.03
Flakes	315	17	67	399	49.08
Tested Cobbles	2	-	-	2	0.25
Percussion Tools:					
Chopper	1	-	-	1	0.12
Hammerstones	29	-	-	29	3.57
Precision Tools:					
Retouched Debitage	11	-	-	11	1.35
Retouched Flakes	32	-	-	32	3.94
Scrapers	6	-	-	6	0.74
Utilized Debitage	2	-	-	2	0.25
Utilized Flakes	9	-	-	9	1.11
Multi-Use Tools:					
Hammer/Cores	11	-	2	13	1.60
Pottery:					
Potsherds, TBW*	6	-	-	6	0.74
Totals	696	21	96	813	100.00
Percent	85.61	2.58	11.81	100.00	

*TBW=Tizon Brown Ware

TABLE 5.11-8

Lithic Material Distribution
Site SDI-12,809

Artifact Category	Material					Total	Percent
	Chalcedony	Chert	FGM*	Granite	MGM**	Quartz	Quartzite
Ground Stone Tools:							
Manos	-	-	-	4	-	-	2
Metates	-	-	-	2	-	-	-
Lithic Production Waste:							
Cores	-	-	20	1	38	-	-
Debitage	-	-	38	1	197	-	-
Flakes	1	1	114	1	277	1	4
Tested Cobbles	-	-	-	-	2	-	-
Percussion Tools:							
Chopper	-	-	-	-	1	-	-
Hammerstones	-	-	6	-	22	-	1
Precision Tools:							
Retouched Debitage	-	-	2	-	9	-	-
Retouched Flakes	-	-	14	-	18	-	-
Scrapers	-	-	3	-	3	-	-
Utilized Debitage	-	-	1	-	1	-	-
Utilized Flakes	-	-	5	-	4	-	-
Multi-Use Tools:							
Hammer/Cores	-	-	1	-	11	-	1
Totals	1	1	204	9	583	1	8
Percent	0.12	0.12	25.28	1.12	72.24	0.12	0.99
							100.00

5.12 SITE SDI-14,204

5.12.1 Site Description

SDI-14,204 is recorded as a lithic scatter on the slopes of Wolf Canyon, near the south end of the canyon. The site lies on a slope east of the Wolf Canyon drainage. The project APE will pass along the western most side of the site. The area of the APE corresponds to the graded dirt road that passes up Wolf Canyon. The site has been impacted by cultivation and grazing associated with the long period of agricultural use on Otay Ranch, and within the APE, the grading of the dirt road has severely impacted any portions of the site that may have been present. The setting of the site is shown in a photograph of the site area provided in Plate 5.12-1. The general location of this resource is shown in Figure 5.0-1.

Testing of the portion of the site within the APE consisted of the mapping of the site and the excavation of eight shovel tests, all of which were negative. Testing methods and unit sizes were consistent with those discussed in the methodology section (Section 4.0). The field investigations at this site were conducted in August, 2000. The field study of the site did not include the recovery of any artifacts.

5.12.2 Description of Field Investigations

The field investigations at SDI-14,204 were conducted using the standard methodologies described in Section 4.1. The site was disturbed by agricultural and grazing activities over the past 100 years, as well as the grading of a dirt road through the west side of the site. The APE for the project passes through the western most side of SDI-14,204, and all field investigations were focused on the general area of potential impact.

Surface Mapping, Recording, and Collection

While surface artifacts were observed just outside of the APE, no artifacts could be located within the APE. Certainly, the APE passes through a portion of the site that would be expected to include artifacts associated with the occupation of the site; however, previous impacts appear to have scraped or disturbed the lower slopes of the canyon, where the western portion of the site is situated. These impacts have removed evidence of the prehistoric use of the site at this location. No surface artifacts were identified within the APE.

Subsurface Excavations

The potential for the existence of subsurface deposits at SDI-14,204 was investigated with the excavation of a series of eight shovel tests. The locations of the tests are shown in Figure 5.12-1. All of these tests were excavated to a minimum depth of 30 centimeters. All of the eight shovel tests were negative, producing no evidence of cultural materials. The shovel test excavations are detailed in Table 5.12-1.

5.12.3 Laboratory Analysis

The laboratory analysis for SDI-14,204 was not necessary, as no artifacts were recovered during the field investigation.

5.12.4 Discussion

The testing of SDI-14,204 demonstrated that the portion of the site that was located within the APE has been intensely disturbed at some time in the past, and no evidence of any prehistoric materials remains within the APE. The assessment of the site according to the criteria listed in Section 3.0 (integrity, variability, age, and function) is provided below:

- Integrity:* Within the APE, SDI-14,204 is characterized as a very disturbed resource. Impacts to the site have removed all evidence of the prehistoric use of the site. Therefore, its integrity is poor.
- Variability:* Within the APE, no cultural materials were observed, and therefore, the site does not exhibit a high degree of variability.
- Age:* The age or cultural affiliation of SDI-14,204 could not be satisfactorily determined on the basis of the data collected; no culturally diagnostic artifacts were recovered.
- Function:* The data recorded in the site forms combined with observations at SDI-14,204 suggest the site was a temporary camp used to process food materials and to manufacture and maintain lithic tools. The function of this site is much the same as the majority of small sites situated along Salt Creek and the Otay River.

5.12.5 Summary

The testing of SDI-14,204 demonstrated that this site no longer exists within the APE. The site itself was a prehistoric temporary camp that is associated with the subsistence pattern of either the Archaic (inland La Jolla Complex) or Late Prehistoric (Kumeyaay Indians) occupations of the area.

5.12.6 Evaluation

The field study conducted for Site SDI-14,204 characterized the site as a very disturbed resource. Based on the information derived from the testing program, the site area within the APE is not considered important according to CEQA criteria. Portions of the site located east of the APE may include important components of the site; however, investigations were generally limited to the area in or adjacent to the APE.

5.12.7 Impact Assessment

Site SDI-14,204 was tested because the alignment for the Wolf Canyon spur of the Salt Creek Sewer Project is tentatively designed to pass along the western side of the site. Assuming that the trench is kept within the road that passes up Wolf Canyon, and associated construction activities will be limited to an area not exceeding 20 feet on either side of the road, then the potential impacts to SDI-14,204 will be minimal. Because the portion of SDI-14,204 within the APE was evaluated as not important, the impacts to the site within the APE will not be significant.

5.12.8 Native American Heritage Values

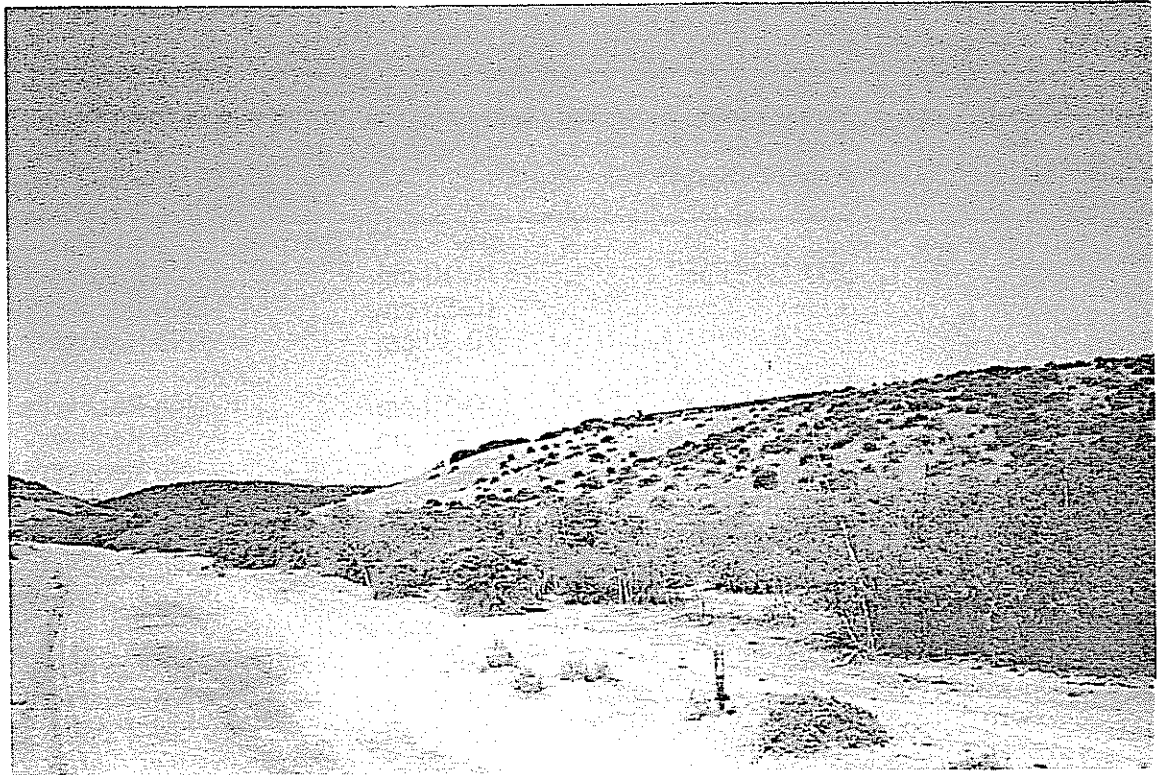
The Native American community was not contacted with regard to this site, as no archaeological materials or remains of special heritage sensitivity to the Native American community were identified at SDI-14,204.

5.12.9 Mitigation Measures

The pipeline construction will impact this site, but no mitigation measures for direct impacts will be necessary. The portion of Site SDI-14,204 within the APE has been determined to be not significant. Therefore, no mitigation measures will be required to reduce the significance of construction impacts. However, because of the potential for elements of the site to be masked or buried within the APE, monitoring of the trench excavation will be necessary. Also, because of the potential for significant components of the site outside of the APE, construction activities must be contained to the APE, and the archaeological monitor will be required to ensure that construction activities will not intrude into any untested portions of SDI-14,204.

Figure 5.12-1
Excavation Location Map — SDI-14,204

**(Deleted for Public Review;
Bound Separately in Confidential Appendix)**



View of Site SDI-14,204, looking northeast.

TABLE 5.12-1

Shovel Test Excavation Data
Site SDI-14,204

Shovel Test	Location from Datum A Azimuth/Range	Depth	Recovery
1	200°/286 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
2	202°/216 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
3	207°/117 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
4	238°/50 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
5	322°/55 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
6	348°/110 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
7	347°/215 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
8	352°/349 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery

5.13 SITE SDI-14,208

5.13.1 Site Description

Site SDI-14,208 is a prehistoric site located west of the confluence of Salt Creek Canyon and Otay Valley, along the north side of the Otay River. The site is situated on relatively flat terrain, with the southern portion of the site sloping down to the floodplain. The majority of the site has been disturbed to some extent. The southern portion of the site has been impacted severely by the sand and gravel mining operation that took place within the floodplain. The central and northern portions of the site have been disturbed by agricultural (disking) and grazing operations of the Otay Ranch over the last 100 years. The setting of the site is shown in a photograph provided in Plate 5.13–1. A dirt road, which has also disturbed the site, passes from west to east through the site parallel to the Otay River. The general location of this resource is shown in Figure 5.0–1. Site SDI-14,208 was recorded as of a large surface scatter of lithic artifacts with flaked and ground stone tools.

The testing program at SDI-14,208 consisted of the mapping and recovery of surface artifacts and the excavation of 30 shovel tests. Because all of the shovel tests were negative, a test unit was not included in the testing program. Testing methods and unit sizes were consistent with those discussed in the methodology section (Section 4.0). The field investigations at this site were conducted in August, 2000. All artifacts recovered during the field investigations were subjected to the laboratory analysis procedures described in Section 4.2 of this report.

5.13.2 Description of Field Investigations

The field investigations at SDI-14,208 were conducted using the standard methodologies described in Section 4.1. The site was disturbed by agricultural and grazing activities over the past 100 years, as well as the grading of a dirt road through the site. The APE for the project passes through the center of SDI-14,208, and all field investigations were focused on the general area of potential impact.

Surface Mapping, Recording, and Collection

The locations from which surface artifacts were recovered at SDI-14,208 are shown in Figure 5.13–1. The locations of the surface artifacts were recorded to establish the boundaries of the site within the APE. Based upon the surface recovery data, the area of the site within the APE measures approximately 670 feet (204 meters) from west to east and 40 feet (10 meters) from south to north, covering an area of approximately 26,800 square feet (2,040 square meters). The total dimensions of the site were not established as part of this study.

The surface collection is summarized in Table 5.13–1, and a complete list of the individual surface artifacts and provenience information is provided in Table 5.13–2. The 20 surface locations at SDI-14,208 yielded a total of 37 artifacts, consisting of lithic production waste, percussion tools, and precision tools. The collection was dominated by lithic production waste,

which accounted for 78.38% (N=29); followed by precision tools, representing 18.92% (N=7), and percussion tools, which comprised 2.70% (N=1) of the collection. The lithic materials recovered from the surface collection consist of fine- and medium-grained metavolcanics.

Subsurface Excavations

The potential for the existence of subsurface deposits at SDI-14,208 was investigated with the excavation of a series of 30 shovel tests. The locations of the tests are shown in Figure 5.13-1. The shovel tests were positioned along the east/west axis of the site, paralleling the path of the proposed pipeline corridor. All of these tests were excavated to a minimum depth of 30 centimeters, unless compacted, culturally sterile soil or bedrock was encountered. All of the 30 shovel tests were negative, as no cultural materials were discovered. The shovel test excavations are detailed in Table 5.13-3.

Because the shovel tests found no evidence of any subsurface deposits, a test unit excavation was not conducted at SDI-14,208. It may be possible that the previous impacts to the site, including the sand and gravel mining that has destroyed most of the southern portion of the site along the floodplain of the Otay River, has actually damaged the resource more than anticipated, including the area within the APE.

5.13.3 Laboratory Analysis

The laboratory analysis for SDI-14,208 included the standard procedures described in Section 4.2 of this report. All of the artifacts recovered from the field investigations conducted at the site were returned to the laboratory to be cleaned as necessary, cataloged and analyzed. The total collection of cultural materials from SDI-14,208 is represented in the surface collection summary (Table 5.13-1). The analyses which were conducted on the artifacts from Site SDI-14,208 is discussed in the following sections.

Lithic Analysis

The collection of 37 lithic artifacts was dominated by lithic production waste, which accounted for 78.38% (N=29). The remainder of the collection consisted of eight tools, which comprised 21.62% (N=8) of the total artifact recovery. The tool collection included one hammerstone, two scrapers, two retouched flakes, and three retouched debitage. All of the tools were manufactured from metavolcanics. No grinding tools were noted within the APE; however, outside of the APE, manos and metate fragments could be observed within the site boundaries.

5.13.4 Discussion

The testing of SDI-14,208 demonstrated that the surface expression of lithic artifacts was not accompanied by any subsurface deposit within the APE. The assessment of the site according to the criteria listed in Section 3.0 (integrity, variability, age, and function) is provided below:

- Integrity:* SDI-14,208 is characterized as a surface scatter of cultural materials. The site area within the pipeline APE has been disturbed by agricultural use, sand and gravel mining, and a dirt road that passes through the site. The previous impacts have significantly affected the site's integrity by disturbing the horizontal association of artifacts. Therefore, its integrity is poor.
- Variability:* The variability of a site consists of the horizontal and vertical separation of cultural materials that represent spatial, temporal, or cultural distinctions. The small quantity of cultural materials, the lack of a substantial subsurface deposit, and the disturbance within the APE, indicate that within the pipeline construction corridor, the site does not exhibit a high degree of variability.
- Age:* The age or cultural affiliation of SDI-14,208 could not be satisfactorily determined on the basis of the data collected; no culturally diagnostic artifacts were recovered.
- Function:* The artifacts recovered from SDI-14,208 are indicative of a temporary camp used to process food materials and to manufacture and maintain lithic tools. The function of this site is much the same as the majority of small sites situated along Salt Creek and the Otay River.

5.13.5 Summary

The testing of SDI-14,208 demonstrated that this site consisted of a sparse surface expression of lithic artifacts. The site area within the APE has produced artifacts that indicate the pipeline will pass through a prehistoric temporary camp that is associated with the subsistence pattern of either the Archaic (inland La Jolla Complex) or Late Prehistoric (Kumeyaay Indians) occupations of the area.

5.13.6 Evaluation

The field and laboratory studies conducted for Site SDI-14,208 characterize the site as a surface scatter of cultural materials. The artifact collection indicates that the site was used primarily as a resource extraction site where site activities included the procurement and processing of food resources, as well as lithic tool production. The lack of a deep midden, hearth features, and other evidence of extended site occupation suggests that the site was not a permanent camp.

Based on the information derived from the testing program, the site area within the APE is not considered important according to CEQA criteria. Portions of the site located north and south of the APE may include important components of the site; however, investigations were generally limited to the area in or adjacent to the APE.

5.13.7 Impact Assessment

Site SDI-14,208 was tested because the alignment for the Salt Creek Sewer Project is tentatively designed to pass within the site boundaries. The pipeline trench is currently designed to stay within the dirt road that passes through the site. Assuming that the trench is kept within the road and associated construction activities will be limited to an area not exceeding 20 feet on either side of the road, then the potential impacts to SDI-14,208 will be minimal. Because the portion of SDI-14,208 within the APE was evaluated as not important, the impacts to the site within the APE will not be significant.

5.13.8 Native American Heritage Values

The Native American community was not contacted with regard to this site, as no archaeological materials or remains of special heritage sensitivity to the Native American community were identified at SDI-14,208.

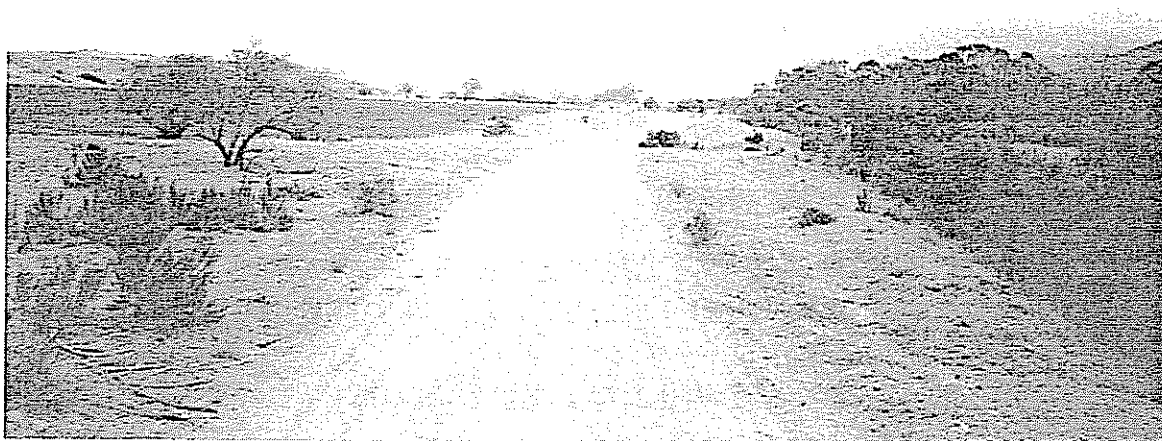
5.13.9 Mitigation Measures

The pipeline construction will impact this site, but no mitigation measures for direct impacts will be necessary. The portion of Site SDI-14,208 within the APE has been determined to be not significant. Therefore, no mitigation measures will be required to reduce the significance of construction impacts. However, because of the potential for elements of the site to be masked or buried within the APE, monitoring of the trench excavation will be necessary. Also, because of the potential for significant components of the sites outside of the APE, construction activities must be contained to the APE, and the archaeological monitor will be required to ensure that construction activities will not intrude into any untested portions of SDI-14,208.

Figure 5.13-1

Excavation Location Map — SDI-14,208

**(Deleted for Public Review;
Bound Separately in Confidential Appendix)**



View of Site SDI-14,208, looking east.

TABLE 5.13-1Summary of Surface Recovery
Site SDI-14,208

Recovery Category	Quantity	Percent
Lithic Production Waste:		
Cores	4	10.81
Debitage	13	35.14
Flakes	12	32.43
Percussion Tools:		
Hammerstone	1	2.70
Precision Tools:		
Retouched Debitage	3	8.11
Retouched Flakes	2	5.41
Scrapers	2	5.41
Total	37	100.00

TABLE 5.13-2Surface Recovery Data
Site SDI-14,208

Recovery Location	Location from Datum A Azimuth/Range	Quantity	Recovery	Material	Cat. No.
1	0°/0 Feet	1	Core	FGM*	1
2	81°/107 Feet	1	Core	MGM**	2
3	79°/143 Feet	1	Retouched Debitage	FGM	3
		1	Debitage	MGM	4
		3	Flakes	MGM	5
4	75°/165 Feet	1	Debitage	MGM	6
5	80°/298 Feet	1	Retouched Flake	MGM	7
6	75°/329 Feet	1	Retouched Debitage	MGM	8
7	96°/271 Feet	1	Scraper	MGM	9
8	98°/212 Feet	1	Core	MGM	10
		1	Debitage	MGM	11
9	100°/194 Feet	1	Debitage	FGM	12
10	112°/141 Feet	1	Flake	MGM	13
11	250°/27 Feet	3	Debitage	MGM	14
12	278°/59 Feet	1	Core	MGM	15
13	255°/99 Feet	4	Debitage	MGM	16
14	262°/108 Feet	1	Flake	FGM	17
15	259°/201 Feet	1	Flake	MGM	18
16	260°/230 Feet	1	Scraper	FGM	19
17	258°/306 Feet	1	Hammerstone, Circular	FGM	20
		4	Flakes	MGM	21
18	259°/284 Feet	1	Retouched Debitage	FGM	22
		1	Flake	MGM	23
19	259°/295 Feet	1	Retouched Flake	MGM	24
20	259°/276 Feet	2	Debitage	MGM	25
		1	Flake	MGM	26

*FGM=Fine-Grained Metavolcanic

**MGM=Medium-Grained Metavolcanic

TABLE 5.13-3Shovel Test Excavation Data
Site SDI-14,208

Shovel Test	Location from Datum A Azimuth/Range	Depth	Recovery
1	65°/11 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
2	75°/84 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
3	76°/118 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
4	79°/347 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
5	88°/434 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
6	80°/470 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
7	90°/300 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
8	95°/212 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
9	110°/140 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
10	125°/82 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery

Shovel Test	Location from Datum A Azimuth/Range	Depth	Recovery
11	260°/71 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
12	260°/165 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
13	255°/247 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
14	260°/316 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
15	257°/383 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
16	259°/470 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
17	255°/553 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
18	250°/556 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
19	248°/495 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
20	250°/465 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
21	250°/444 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
22	248°/395 Feet	0-10 cm. 10-20 cm.	No Recovery No Recovery

Shovel Test	Location from Datum A Azimuth/Range	Depth	Recovery
22	248°/395 Feet	20-30 cm.	No Recovery
23	245°/325 Feet	0-10 cm.	No Recovery
		10-20 cm.	No Recovery
		20-30 cm.	No Recovery
24	242°/272 Feet	0-10 cm.	No Recovery
		10-20 cm.	No Recovery
		20-30 cm.	No Recovery
25	240°/219 Feet	0-10 cm.	No Recovery
		10-20 cm.	No Recovery
		20-30 cm.	No Recovery
26	237°/164 Feet	0-10 cm.	No Recovery
		10-20 cm.	No Recovery
		20-30 cm.	No Recovery
27	227°/109 Feet	0-10 cm.	No Recovery
		10-20 cm.	No Recovery
		20-30 cm.	No Recovery
28	210°/67 Feet	0-10 cm.	No Recovery
		10-20 cm.	No Recovery
		20-30 cm.	No Recovery
29	165°/41 Feet	0-10 cm.	No Recovery
		10-20 cm.	No Recovery
		20-30 cm.	No Recovery
30	85°/520 Feet	0-10 cm.	No Recovery
		10-20 cm.	No Recovery
		20-30 cm.	No Recovery

5.14 SITE SDI-14,211

5.14.1 Site Description

Site SDI-14,211 is recorded as a lithic scatter on the slopes of Wolf Canyon, approximately 1,500 feet north of the mouth of the canyon. The project APE will pass along the east side of the site. The area of the APE corresponds to the graded dirt road that passes up Wolf Canyon. The site has been impacted by cultivation and grazing associated with the long period of agricultural use on Otay Ranch, and within the APE, the grading of the dirt road has severely impacted any portions of the site that may have been present. The setting of the site is shown in a photograph of the site area provided in Plate 5.14-1. The general location of this resource is shown in Figure 5.0-1.

Testing of the portion of the site within the APE consisted of the mapping of the site and the excavation of ten shovel tests, all of which were negative. Testing methods and unit sizes were consistent with those discussed in the methodology section (Section 4.0). The field investigations at this site were conducted in August, 2000. The field study of the site did not include the recovery of any artifacts.

5.14.2 Description of Field Investigations

The field investigations at SDI-14,211 were conducted using the standard methodologies described in Section 4.1. The site was disturbed by agricultural and grazing activities over the past 100 years, as well as the grading of a dirt road through the east side of the site. The APE for the project passes through the eastern most side of SDI-14,211, and all field investigations were focused on the general area of potential impact.

Surface Mapping, Recording, and Collection

While surface artifacts were observed just outside of the APE, no artifacts could be located within the APE. Certainly, the APE passes through a portion of the site that would be expected to include artifacts associated with the occupation of the site; however, previous impacts appear to have scraped or disturbed the lower slopes of the canyon, where the eastern portion of the site is situated. These impacts have removed evidence of the prehistoric use of the site at this location. No surface artifacts were identified within the APE.

Subsurface Excavations

The potential for the existence of subsurface deposits at SDI-14,211 was investigated with the excavation of a series of ten shovel tests. The locations of the tests are shown in Figure 5.14-1. All of these tests were excavated to a minimum depth of 30 centimeters. All of the ten shovel tests were negative, producing no evidence of cultural materials. The shovel test excavations are detailed in Table 5.14-1.

5.14.3 Laboratory Analysis

The laboratory analysis for SDI-14,211 was not necessary, as no artifacts were recovered during the field investigation.

5.14.4 Discussion

The testing of SDI-14,211 demonstrated that the portion of the site that was located within the APE has been intensely disturbed at some time in the past, and no evidence of any prehistoric materials remains within the APE. The assessment of the site according to the criteria listed in Section 3.0 (integrity, variability, age, and function) is provided below:

- Integrity:* Within the APE, SDI-14,211 is characterized as a very disturbed resource. Impacts to the site have removed all evidence of the prehistoric use of the site. Therefore, its integrity is poor.
- Variability:* Within the APE, no cultural materials were observed, and therefore, the site does not exhibit a high degree of variability.
- Age:* The age or cultural affiliation of SDI-14,211 could not be satisfactorily determined on the basis of the data collected; no culturally diagnostic artifacts were recovered.
- Function:* The data recorded in the site forms combined with observations at SDI-14,211 suggest the site was a temporary camp used to process food materials and to manufacture and maintain lithic tools. The function of this site is much the same as the majority of small sites situated along Salt Creek and the Otay River.

5.14.5 Summary

The testing of SDI-14,211 demonstrated that this site no longer exists within the APE. The site itself was a prehistoric temporary camp that is associated with the subsistence pattern of either the Archaic (inland La Jolla Complex) or Late Prehistoric (Kumeyaay Indians) occupations of the area.

5.14.6 Evaluation

The field study conducted for Site SDI-14,211 characterized the site as a very disturbed resource. Based on the information derived from the testing program, the site area within the APE is not considered important according to CEQA criteria. Portions of the site located west of the APE may include important components of the site; however, investigations were generally limited to the area in or adjacent to the APE.

5.14.7 Impact Assessment

Site SDI-14,211 was tested because the alignment for the Wolf Canyon spur of the Salt Creek Sewer Project is tentatively designed to pass along the eastern side of the site. Assuming that the trench is kept within the road that passes up Wolf Canyon, and associated construction activities will be limited to an area not exceeding 20 feet on either side of the road, then the potential impacts to SDI-14,211 will be minimal. Because the portion of SDI-14,211 within the APE was evaluated as not important, the impacts to the site within the APE will not be significant.

5.14.8 Native American Heritage Values

The Native American community was not contacted with regard to this site, as no archaeological materials or remains of special heritage sensitivity to the Native American community were identified at SDI-14,211.

5.14.9 Mitigation Measures

The pipeline construction will impact this site, but no mitigation measures for direct impacts will be necessary. The portion of Site SDI-14,211 within the APE has been determined to be not significant. Therefore, no mitigation measures will be required to reduce the significance of construction impacts. However, because of the potential for elements of the site to be masked or buried within the APE, monitoring of the trench excavation will be necessary. Also, because of the potential for significant components of the site outside of the APE, construction activities must be contained to the APE, and the archaeological monitor will be required to ensure that construction activities will not intrude into any untested portions of SDI-14,211.

Figure 5.14-1

Excavation Location Map — SDI-14,211

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Bound Separately in Confidential Appendix)**



View of Site SDI-14,211, looking northwest.

TABLE 5.14-1Shovel Test Excavation Data
Site SDI-14,211

Shovel Test	Location from Datum A Azimuth/Range	Depth	Recovery
1	219°/26 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
2	0°/0 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
3	14°/52 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
4	18°/126 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
5	24°/190 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
6	25°/253 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
7	28°/324 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
8	26°/410 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
9	24°/482 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
10	23°/551 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery

5.15 SITE SDI-14,218

5.15.1 Site Description

Site SDI-14,218 is a prehistoric site located at the confluence of Salt Creek Canyon and Otay Valley. The site lies on a slope adjacent to the east of Salt Creek. This site has been determined to be within the project APE, which will pass along the western side of the site. The site has been impacted by cultivation and grazing, and by the grading of several dirt roads that cross the site. The site has very little vegetation cover, due to the impacts to the site. The setting of the site is shown in a photograph of the site area provided in Plate 5.15-1. The general location of this resource is shown in Figure 5.0-1. Site SDI-14,218 consists of a surface scatter of lithic artifacts.

The testing program at SDI-14,218 consisted of the mapping and recovery of surface artifacts, and the excavation of four shovel tests. Testing methods and unit sizes were consistent with those discussed in the methodology section (Section 4.0). The field investigations at this site were conducted in August, 2000. All artifacts recovered during the field investigations were subjected to the laboratory analysis procedures described in Section 4.2 of this report.

5.15.2 Description of Field Investigations

The field investigations at SDI-14,218 were conducted using the standard methodologies described in Section 4.1. The site was disturbed by agricultural and grazing activities over the past 100 years, as well as the grading of a dirt road through the west side of the site. The APE for the project passes through the western most side of SDI-14,218, and all field investigations were focused on the general area of potential impact.

Surface Mapping, Recording, and Collection

The locations from which surface artifacts were recovered at SDI-14,218 are shown in Figure 5.15-1. The locations of the surface artifacts were recorded to establish the boundaries of the site within the APE. Based upon the surface recovery data, the area of the site within the APE measures approximately 100 feet (30 meters) from northeast to southwest and 20 feet (six meters) from northwest to southeast, covering an area of approximately 2,000 square feet (180 square meters). The total dimensions of the site were not established as part of this study.

A complete list of the individual surface artifacts and provenience information is provided in Table 5.15-1. The three surface locations at SDI-14,218 yielded three artifacts, consisting of two flakes and one hammerstone.

Subsurface Excavations

The potential for the existence of subsurface deposits at SDI-14,218 was investigated with the excavation of a series of four shovel tests. The locations of the tests are shown in Figure 5.15-1. All of these tests were excavated to a minimum depth of 30 centimeters. All of the shovel

tests were negative, as no evidence of any cultural materials were discovered (Table 5.15–2).

5.15.3 Laboratory Analysis

The laboratory analysis for SDI-14,218 included the standard procedures described in Section 4.2 of this report. All of the artifacts recovered from the field investigations conducted at the site were returned to the laboratory to be cleaned as necessary, cataloged, and analyzed. The total collection of cultural materials from SDI-14,218 consisted of two fine-grained metavolcanic flakes and one medium-grained metavolcanic hammerstone.

5.15.4 Discussion

The testing of SDI-14,218 demonstrated that the surface expression of lithic artifacts was not accompanied by a subsurface deposit within the APE. The assessment of the site according to the criteria listed in Section 3.0 (integrity, variability, age, and function) is provided below:

- Integrity:** SDI-14,218 is characterized as a surface scatter of cultural materials. The site area within the pipeline APE has been disturbed by agricultural use and grading of dirt roads that pass through the site. The previous impacts have significantly affected the site's integrity by disturbing the horizontal association of artifacts. Therefore, its integrity is poor.
- Variability:** The variability of a site consists of the horizontal and vertical separation of cultural materials that represent spatial, temporal, or cultural distinctions. The small quantity of cultural materials, the lack of a substantial subsurface deposit, and the disturbance within the APE, indicate that within the pipeline construction corridor, the site does not exhibit a high degree of variability.
- Age:** The age or cultural affiliation of SDI-14,218 could not be satisfactorily determined on the basis of the data collected; no culturally diagnostic artifacts were recovered.
- Function:** The artifacts recovered from SDI-14,218 are indicative of a temporary camp used to process food materials and to manufacture and maintain lithic tools. The function of this site is much the same as the majority of small sites situated along Salt Creek and the Otay River.

5.15.5 Summary

The testing of SDI-14,218 demonstrated that this site consisted of a sparse surface expression of lithic artifacts. The site area within the APE has produced artifacts that indicate the pipeline will pass through a prehistoric temporary camp that is associated with the subsistence pattern of either the Archaic (inland La Jolla Complex) or Late Prehistoric (Kumeyaay Indians) occupations of the area.

5.15.6 Evaluation

The field and laboratory studies conducted for Site SDI-14,218 characterize the site as a surface scatter of cultural materials; however, no evidence of a subsurface deposit was detected within the project APE. The artifacts observed at the site, notably east of the APE, indicate that the site was used primarily as a resource extraction site, where site activities included the procurement and processing of food resources, as well as lithic tool production.

Based on the information derived from the testing program, the site area within the APE is not considered important according to CEQA criteria. Portions of the site located east of the APE may include important components of the site; however, investigations were generally limited to the area in or adjacent to the APE.

5.15.7 Impact Assessment

Site SDI-14,218 was tested because the alignment for the Salt Creek Sewer Project is tentatively designed to pass within the site boundaries. The pipeline trench is currently designed to stay within the dirt road that passes along the west side of the site. Assuming that the trench is kept within the road and associated construction activities will be limited to an area not exceeding 20 feet on either side of the road, then the potential impacts to SDI-14,218 will be minimal. Because the portion of SDI-14,218 within the APE was evaluated as not important, the impacts to the site within the APE will not be significant.

5.15.8 Native American Heritage Values

The Native American community was not contacted with regard to this site, as no archaeological materials or remains of special heritage sensitivity to the Native American community were identified at SDI-14,218.

5.15.9 Mitigation Measures

The pipeline construction will impact this site, but no mitigation measures for direct impacts will be necessary. The portion of Site SDI-14,218 within the APE has been determined to be not significant. Therefore, no mitigation measures will be required to reduce the significance of construction impacts. However, because of the potential for elements of the site to be masked or buried within the APE, monitoring of the trench excavation will be necessary. Also, because of the potential for significant components of the site outside of the APE, construction activities must be contained to the APE, and the archaeological monitor will be required to ensure that construction activities will not intrude into any untested portions of SDI-14,218.

Figure 5.15-1
Excavation Location Map — SDI-14,218
(Deleted for Public Review;
Bound Separately in Confidential Appendix)



View of Site SDI-14,218, looking south.

TABLE 5.15-1

Surface Recovery Data
Site SDI-14,218

Recovery Location	Location from Datum A Azimuth/Range	Quantity	Recovery	Material	Cat. No.
1	16°/35 Feet	1	Flake	FGM*	1
2	29°/119 Feet	1	Flake	FGM	2
3	214°/57 Feet	1	Hammerstone, Spherical	MGM**	3

*FGM=*Fine-Grained Metavolcanic*

**MGM=*Medium-Grained Metavolcanic*

TABLE 5.15-2Shovel Test Excavation Data
Site SDI-14,218

Shovel Test	Location from Datum A Azimuth/Range	Depth	Recovery
1	35°/68 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
2	80°/15 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
3	205°/43 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
4	19°/129 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery

5.16 SITE SDI-14,220

5.16.1 Site Description

Site SDI-14,220 is a prehistoric lithic scatter site located on the east side of Salt Creek Canyon. The site lies on a slope adjacent to Salt Creek. The site has been impacted by cultivation and grazing associated with the long period of agricultural use on Otay Ranch, as well as a dirt road that passes through the site area. The setting of the site is shown a photograph of the site area provided in Plate 5.16–1. A dirt road, which has disturbed the site, passes through the site parallel to Salt Creek. The general location of this resource is shown in Figure 5.0–1.

The testing program at SDI-14,220 consisted of the mapping and recovery of surface artifacts and the excavation of five shovel tests. Testing methods and unit sizes were consistent with those discussed in the methodology section (Section 4.0). The field investigations at this site were conducted in August, 2000. All artifacts recovered during the field investigations were subjected to the laboratory analysis procedures described in Section 4.2 of this report.

5.16.2 Description of Field Investigations

The field investigations at SDI-14,220 were conducted using the standard methodologies described in Section 4.1. The site was disturbed by agricultural and grazing activities over the past 100 years, as well as the grading of a dirt road through the east side of the site. The APE for the project passed through the eastern most side of SDI-14,220, and all field investigations were focused on the general area of potential impact.

Surface Mapping, Recording, and Collection

The locations from which surface artifacts were recovered at SDI-14,220 are shown in Figure 5.16–1. The surface collection data is detailed in Table 5.16–1. The two surface locations at SDI-14,220 yielded one medium-grained metavolcanic core and one fine-grained metavolcanic flake. The small collection represents the lithic production waste artifact category.

Subsurface Excavations

The potential for the existence of subsurface deposits at SDI-14,220 was investigated with the excavation of a series of five shovel tests. The locations of the tests are shown in Figure 5.16–1. All of these tests were excavated to a depth of 30 centimeters. Of the five shovel tests excavated, none yielded cultural materials. The shovel test excavations are detailed in Table 5.16–2.

Because the shovel tests did not reveal any evidence of a subsurface deposit, a test unit was not excavated as part of the site evaluation. The potential does exist for the presence of subsurface deposits west of the APE, where a larger surface scatter was observed.

5.16.3 Laboratory Analysis

All of the artifacts recovered from the field investigations conducted at the site were returned to the laboratory to be cleaned as necessary, cataloged, and analyzed. The total collection of cultural materials from SDI-14,220 consisted only of lithic production waste, one core and one flake. The materials recovered indicate that lithic production was a common site activity.

5.16.4 Discussion

The testing of SDI-14,220 demonstrated that the surface expression of lithic artifacts was not accompanied by a subsurface deposit within the APE. The assessment of the site according to the criteria listed in Section 3.0 (integrity, variability, age, and function) is provided below:

- Integrity:** SDI-14,220 is characterized as a surface scatter of cultural materials. The site area within the pipeline APE has been disturbed by agricultural use and a dirt road that passes through the site. The previous impacts have significantly affected the site's integrity by disturbing the horizontal association of artifacts. Therefore, its integrity is poor.
- Variability:** The variability of a site consists of the horizontal and vertical separation of cultural materials that represent spatial, temporal, or cultural distinctions. The small quantity of cultural materials, the lack of a substantial subsurface deposit, and the disturbance within the APE, indicate that within the pipeline construction corridor, the site does not exhibit a high degree of variability.
- Age:** The age or cultural affiliation of SDI-14,220 could not be satisfactorily determined on the basis of the data collected; no culturally diagnostic artifacts were recovered.
- Function:** The artifacts recovered from SDI-14,220 are indicative of a temporary camp used to process food materials and to manufacture and maintain lithic tools. The function of this site is much the same as the majority of small sites situated along Salt Creek and the Otay River.

5.16.5 Summary

The testing of SDI-14,220 demonstrated that this site consisted of a sparse surface expression of lithic artifacts. The site area within the APE has produced artifacts that indicate the pipeline will pass through a prehistoric temporary camp that is associated with the subsistence pattern of either the Archaic (inland La Jolla Complex) or Late Prehistoric (Kumeyaay Indians) occupations of the area.

5.16.6 Evaluation

The field and laboratory studies conducted for Site SDI-14,220 characterize the site as a surface scatter of cultural materials; however, no evidence of subsurface deposits was detected within the project APE. The artifacts observed at the site, notably west of the APE, indicate that the site was used primarily as a resource extraction site, where site activities included the procurement and processing of food resources, as well as lithic tool production.

Based on the information derived from the testing program, the site area within the APE is not considered important according to CEQA criteria. Portions of the site located west of the APE may include important components of the site; however, investigations were generally limited to the area in or adjacent to the APE.

5.16.7 Impact Assessment

Site SDI-14,220 was tested because the alignment for the Salt Creek Sewer Project is tentatively designed to pass within the site boundaries. The pipeline trench is currently designed to stay within the dirt road that passes through the east side of the site. Assuming that the trench is kept within the road and associated construction activities will be limited to an area not exceeding 20 feet on either side of the road, then the potential impacts to SDI-14,220 will be minimal. Because the portion of SDI-14,220 within the APE was evaluated as not important, the impacts to the site within the APE will not be significant.

5.16.8 Native American Heritage Values

The Native American community was not contacted with regard to this site, as no archaeological materials or remains of special heritage sensitivity to the Native American community were identified at SDI-14,220.

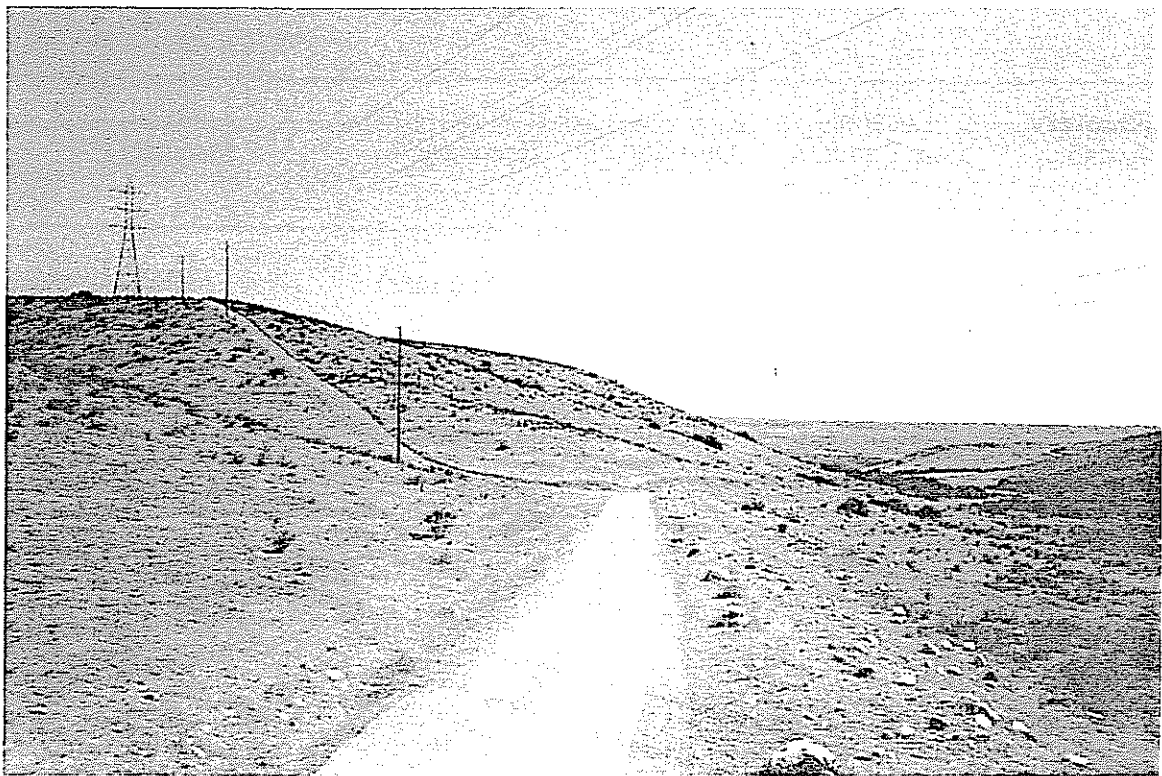
5.16.9 Mitigation Measures

The pipeline construction will impact this site, but no mitigation measures for direct impacts will be necessary. The portion of Site SDI-14,220 within the APE has been determined to be not significant. Therefore, no mitigation measures will be required to reduce the significance of construction impacts. However, because of the potential for elements of the site to be masked or buried within the APE, monitoring of the trench excavation will be necessary. Also, because of the potential for significant components of the site outside of the APE, construction activities must be contained to the APE, and the archaeological monitor will be required to ensure that construction activities will not intrude into any untested portions of SDI-14,220.

Figure 5.16-1

Excavation Location Map — SDI-14,220

**(Deleted for Public Review;
Bound Separately in Confidential Appendix)**



View of Site SDI-14,220, looking south.

TABLE 5.16-1

Surface Recovery Data
Site SDI-14,220

Recovery Location	Location from Datum A Azimuth/Range	Quantity	Recovery	Material	Cat. No.
1	1°/65 Feet	1	Core Fragment	MGM*	1
2	308°/91 Feet	1	Flake	FGM**	2

*MGM=Medium-Grained Metavolcanic

**FGM=Fine-Grained Metavolcanic

TABLE 5.16-2Shovel Test Excavation Data
Site SDI-14,220

Shovel Test	Location from Datum A Azimuth/Range	Depth	Recovery
1	253°/77 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
2	294°/70 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
3	319°/119 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
4	13°/57 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
5	209°/98 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery

5.17 SITE SDI-14,221

5.17.1 Site Description

Site SDI-14,221 is a prehistoric sparse lithic scatter site located on the east side of Salt Creek Canyon. The site lies on a slight elevation adjacent to Salt Creek. The site has been impacted by cultivation and grazing associated with the long period of agricultural use on Otay Ranch, as well as a dirt road that passes through the site area. The setting of the site is shown a photograph of the site area provided in Plate 5.17-1. A dirt road, which has disturbed the site, passes through the site parallel to Salt Creek. The general location of this resource is shown in Figure 5.0-1.

The testing program at SDI-14,221 consisted of the mapping and recovery of surface artifacts and the excavation of five shovel tests. Testing methods and unit sizes were consistent with those discussed in the methodology section (Section 4.0). The field investigations at this site were conducted in August, 2000. All artifacts recovered during the field investigations were subjected to the laboratory analysis procedures described in Section 4.2 of this report.

5.17.2 Description of Field Investigations

The field investigations at SDI-14,221 were conducted using the standard methodologies described in Section 4.1. The site was disturbed by agricultural and grazing activities over the past 100 years, as well as the grading of a dirt road through the east side of the site. The APE for the project passes through the eastern most side of SDI-14,221, and all field investigations were focused on the general area of potential impact.

Surface Mapping, Recording, and Collection

The locations from which surface artifacts were recovered at SDI-14,221 are shown in Figure 5.17-1. The locations of the surface artifacts were recorded to establish the boundaries of the site within the APE. Based upon the surface recovery data, the area of the site within the APE measures approximately 70 feet (21 meters) from north to south and 20 feet (six meters) from west to east, covering an area of approximately 1,400 square feet (126 square meters). The total dimensions of the site were not established as part of this study.

The surface collection is summarized in Table 5.17-1, and a complete list of the individual surface artifacts and provenience information is provided in Table 5.17-2. The seven surface locations at SDI-14,221 yielded a total of 15 artifacts, consisting of 11 flakes, three cores, and one piece of debitage. The total collection consisted of lithic production waste.

Subsurface Excavations

The potential for the existence of subsurface deposits at SDI-14,221 was investigated with the excavation of a series of five shovel tests. The locations of the tests are shown in Figure 5.17-1. All of these tests were excavated to a depth of 30 centimeters. Of the five shovel tests

excavated, none yielded cultural materials. The shovel test excavations are detailed in Table 5.17-3.

Because the shovel tests did not reveal any evidence of a subsurface deposit, a test unit was not excavated as part of the site evaluation. The potential does exist for the presence of subsurface deposits west of the APE, where a larger surface scatter was observed, and the site appears to be less disturbed.

5.17.3 Laboratory Analysis

The laboratory analysis for SDI-14,221 included the standard procedures described in Section 4.2 of this report. All of the artifacts recovered from the field investigations conducted at the site were returned to the laboratory to be cleaned as necessary, cataloged, and analyzed. The entire collection of 15 lithic artifacts consisted of lithic production waste, 11 flakes, three cores and one piece of debitage.

The lithic material distribution of the recovery consisted of two specimens of fine-grained metavolcanic material and 13 specimens of medium-grained metavolcanic material. All lithic materials recovered from SDI-14,221 are present in the vicinity of the site, confirming that the occupants of this site primarily used locally available sources for lithic material.

5.17.4 Discussion

The testing of SDI-14,221 demonstrated that the surface expression of lithic artifacts was not accompanied by a subsurface deposit within the APE. The assessment of the site according to the criteria listed in Section 3.0 (integrity, variability, age, and function) is provided below:

- Integrity:* SDI-14,221 is characterized as a surface scatter of cultural materials. The site area within the pipeline APE has been disturbed by agricultural use and a dirt road that passes through the site. The previous impacts have significantly affected the site's integrity by disturbing the horizontal association of artifacts. Therefore, its integrity is poor.
- Variability:* The variability of a site consists of the horizontal and vertical separation of cultural materials that represent spatial, temporal, or cultural distinctions. The small quantity of cultural materials, the lack of a substantial subsurface deposit, and the disturbance within the APE, indicate that within the pipeline construction corridor, the site does not exhibit a high degree of variability.
- Age:* The age or cultural affiliation of SDI-14,221 could not be satisfactorily determined on the basis of the data collected; no culturally diagnostic artifacts were recovered.
- Function:* The artifacts recovered from SDI-14,221 are indicative of a temporary camp used to process food materials and to manufacture and maintain lithic tools.

The function of this site is much the same as the majority of small sites situated along Salt Creek and the Otay River.

5.17.5 Summary

The testing of SDI-14,221 demonstrated that this site consisted of a sparse surface expression of lithic artifacts. The site area within the APE has produced artifacts that indicate the pipeline will pass through a prehistoric temporary camp that is associated with the subsistence pattern of either the Archaic (inland La Jolla Complex) or Late Prehistoric (Kumeyaay Indians) occupations of the area.

5.17.6 Evaluation

The field and laboratory studies conducted for Site SDI-14,221 characterize the site as a surface scatter of cultural materials; however, no evidence of a subsurface deposit was detected within the project APE. The artifacts observed at the site, notably west of the APE indicate that the site was used primarily as a resource extraction site, where site activities included the procurement and processing of food resources, as well as lithic tool production.

Based on the information derived from the testing program, the site area within the APE is not considered important according to CEQA criteria. Portions of the site located west of the APE may include important components of the site; however, investigations were generally limited to the area in or adjacent to the APE.

5.17.7 Impact Assessment

Site SDI-14,221 was tested because the alignment for the Salt Creek Sewer Project is tentatively designed to pass within the site boundaries. The pipeline trench is currently designed to stay within the dirt road that passes through the eastern side of the site. Assuming that the trench is kept within the road and associated construction activities will be limited to an area not exceeding 20 feet on either side of the road, then the potential impacts to SDI-14,221 will be minimal. Because the portion of SDI-14,221 within the APE was evaluated as not important, the impacts to the site within the APE will not be significant.

5.17.8 Native American Heritage Values

The Native American community was not contacted with regard to this site, as no archaeological materials or remains of special heritage sensitivity to the Native American community were identified at SDI-14,221.

5.17.9 Mitigation Measures

The pipeline construction will impact this site, but no mitigation measures for direct impacts will be necessary. The portion of Site SDI-14,221 within the APE has been determined to be not significant. Therefore, no mitigation measures will be required to reduce the significance of

construction impacts. However, because of the potential for elements of the site to be masked or buried within the APE, monitoring of the trench excavation will be necessary. Also, because of the potential for significant components of the site outside of the APE, construction activities must be contained to the APE, and the archaeological monitor will be required to ensure that construction activities will not intrude into any untested portions of SDI-14,221.

Figure 5.17-1

Excavation Location Map — SDI-14,221

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Bound Separately in Confidential Appendix)**



View of Site SDI-14,221, looking south.

TABLE 5.17-1Summary of Surface Recovery
Site SDI-14,221

Recovery Category	Quantity	Percent
Lithic Production Waste:		
Cores	3	20.00
Debitage	1	6.67
Flakes	11	73.33
Total	15	100.00

TABLE 5.17-2

Surface Recovery Data
Site SDI-14,221

Recovery Location	Location from Datum A Azimuth/Range	Quantity	Recovery	Material	Cat. No.
1	74°/46 Feet	1	Flake	FGM*	1
		1	Core	MGM**	2
2	46°/49 Feet	1	Flake	MGM	3
3	50°/41 Feet	1	Flake	FGM	4
		1	Flake	MGM	5
4	60°/79 Feet	1	Flake	MGM	6
5	64°/51 Feet	3	Flakes	MGM	7
6	181°/106 Feet	1	Debitage	MGM	8
		3	Flakes	MGM	9
7	158°/48 Feet	2	Cores	MGM	10

*FGM=Fine-Grained Metavolcanic

**MGM=Medium-Grained Metavolcanic

TABLE 5.17-3Shovel Test Excavation Data
Site SDI-14,221

Shovel Test	Location from Datum A Azimuth/Range	Depth	Recovery
1	65°/84 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
2	84°/38 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
3	170°/49 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
4	182°/88 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
5	184°/127 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery

5.18 SITE SDI-14,225

5.18.1 Site Description

Site SDI-14,225 is a prehistoric site within the Salt Creek drainage. The site lies on a terrace west of Salt Creek. This site has been intensely impacted over time, and the existing vegetation is generally representative of disturbed landscape. Some small pockets of coastal sage scrub have either survived or managed to become reestablished. The setting of the site is shown in a photograph of the site area provided in Plate 5.18–1. A dirt road, which has disturbed the site, passes through the site parallel to San Diego Aqueduct pipeline corridor. The site area has also been disked and used for grazing in the past. The general location of this resource is shown in Figure 5.0–1. Site SDI-14,225 consists of a surface scatter of lithic artifacts without any indication of a subsurface deposit.

The testing program at SDI-14,225 consisted of the mapping of the site and the excavation of nine shovel tests. Testing methods and unit sizes were consistent with those discussed in the methodology section (Section 4.0). The field investigations at this site were conducted in August, 2000.

5.18.2 Description of Field Investigations

The field investigations at SDI-14,225 were conducted using the standard methodologies described in Section 4.1. The site was disturbed by agricultural and grazing activities over the past 100 years, as well as the construction of the San Diego Aqueduct directly through the site. The APE for the project passes through the center of SDI-14,225, and all field investigations were focused on the general area of potential impact.

Surface Mapping, Recording, and Collection

While surface artifacts were observed just outside of the APE, no artifacts could be located within the APE. Certainly, the APE passes through a portion of the site that would be expected to include artifacts associated with the occupation of the site; however, previous impacts appear to have scraped or disturbed the lower slopes of the canyon where a portion of the site is situated. These impacts have removed evidence of the prehistoric use of the site at this location. No surface artifacts were identified within the APE.

Subsurface Excavations

The potential for the existence of subsurface deposits at SDI-14,225 was investigated with the excavation of a series of nine shovel tests. The locations of the tests are shown in Figure 5.18–1. All of these tests were excavated to a depth of 30 centimeters. All of the shovel tests were negative, as no artifacts or evidence of cultural materials were observed. The shovel test excavations, detailed in Table 5.18–1, reached a maximum depth of 30 centimeters.

Because of the lack of artifacts within the APE, no test unit excavations were conducted at

the site. Given the intensity of impacts at the site, especially associated with the installation of the aqueduct, the likelihood for intact subsurface deposits seems very remote.

5.18.3 Laboratory Analysis

The laboratory analysis for SDI-14,225 was not necessary, as no artifacts were recovered during the field investigation.

5.18.4 Discussion

The testing of SDI-14,225 demonstrated that the portion of the site that was located within the APE has been intensely disturbed at some time in the past, and no evidence of any prehistoric materials remains within the APE. The assessment of the site according to the criteria listed in Section 3.0 (integrity, variability, age, and function) is provided below:

- Integrity: Within the APE, SDI-14,225 is characterized as a very disturbed resource. Impacts to the site have removed all evidence of the prehistoric use of the site. Therefore, its integrity is poor.
- Variability: Within the APE, no cultural materials were observed, and therefore, the site does not exhibit a high degree of variability.
- Age: The age or cultural affiliation of SDI-14,225 could not be satisfactorily determined on the basis of the data collected; no culturally diagnostic artifacts were recovered.
- Function: The data recorded in the site forms combined with observations at SDI-14,225 suggest the site was a temporary camp used to process food materials and to manufacture and maintain lithic tools. The function of this site is much the same as the majority of small sites situated along Salt Creek and the Otay River.

5.18.5 Summary

The testing of SDI-14,225 demonstrated that this site no longer exists within the APE. The site itself was a prehistoric temporary camp that is associated with the subsistence pattern of either the Archaic (inland La Jolla Complex) or Late Prehistoric (Kumeyaay Indians) occupations of the area.

5.18.6 Evaluation

The field and laboratory studies conducted for Site SDI-14,225 characterize the site as a disturbed surface scatter of cultural materials. The lack of a deep midden, hearth features, and other evidence of extended site occupation suggests that the site was not a permanent camp.

Based on the information derived from the testing program, the site area within the APE is

not considered important according to CEQA criteria. Portions of the site located east and west of the APE may include important components of the site; however, investigations were generally limited to the area in or adjacent to the APE.

5.18.7 Impact Assessment

Site SDI-14,225 was tested because the alignment for the Salt Creek Sewer Project is tentatively designed to pass within the site boundaries. The pipeline trench is currently designed to stay within the dirt road that passes through the site. Assuming that the trench is kept within the road and associated construction activities will be limited to an area not exceeding 20 feet on either side of the road, then the potential impacts to SDI-14,225 will be minimal. Because the portion of SDI-14,225 within the APE was evaluated as not important, the impacts to the site within the APE will not be significant.

5.18.8 Native American Heritage Values

The Native American community was not contacted with regard to this site, as no archaeological materials or remains of special heritage sensitivity to the Native American community were identified at SDI-14,225.

5.18.9 Mitigation Measures

The pipeline construction will impact this site, but no mitigation measures for direct impacts will be necessary. The portion of Site SDI-14,225 within the APE has been determined to be not significant. Therefore, no mitigation measures will be required to reduce the significance of construction impacts. However, because of the potential for elements of the site to be masked or buried within the APE, monitoring of the trench excavation will be necessary. Also, because of the potential for significant components of the site outside of the APE, construction activities must be contained to the APE, and the archaeological monitor will be required to ensure that construction activities will not intrude into any untested portions of SDI-14,225.

Figure 5.18-1

Excavation Location Map — SDI-14,225

**(Deleted for Public Review;
Bound Separately in Confidential Appendix)**



View of Site SDI-14,225, looking west.

TABLE 5.18-1Shovel Test Excavation Data
Site SDI-14,225

Shovel Test	Location from Datum A Azimuth/Range	Depth	Recovery
1	307°/149 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
2	287°/38 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
3	339°/129 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
4	14°/69 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
5	89°/83 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
6	108°/162 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
7	117°/237 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
8	134°/95 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
9	132°/203 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery

5.19 SITE SDI-14,233

5.19.1 Site Description

Site SDI-14,233 is recorded as a lithic tool and shell scatter located on the north side of the Otay River floodplain. The project APE will pass along the southern side of the site. The site has been impacted by cultivation and sand and gravel mining in the Otay River floodplain. The setting of the site is shown in a photograph of the site area provided in Plate 5.19-1. A dirt road, which has disturbed the site, passes through the south side of the site parallel to the Otay River. The general location of this resource is shown in Figure 5.0-1. Site SDI-14,233 consists of a surface scatter of lithic artifacts.

The testing program at SDI-14,233 consisted of the mapping and recovery of surface artifacts, and the excavation of five shovel tests. Testing methods and unit sizes were consistent with those discussed in the methodology section (Section 4.0). The field investigations at this site were conducted in August, 2000. All artifacts recovered during the field investigations were subjected to the laboratory analysis procedures described in Section 4.2 of this report.

5.19.2 Description of Field Investigations

The field investigations at SDI-14,233 were conducted using the standard methodologies described in Section 4.1. The site was disturbed by agricultural and grazing activities over the past 100 years, as well as the grading of a dirt road through the south side of the site. The APE for the project passes through the southern most side of SDI-14,233, and all field investigations were focused on the general area of potential impact.

Surface Mapping, Recording, and Collection

The locations from which surface artifacts were recovered at SDI-14,233 are shown in Figure 5.19-1. The locations of the surface artifacts were recorded to establish the boundaries of the site within the APE. Based upon the surface recovery data, the area of the site within the APE measures approximately 30 feet (nine meters) from west to east and ten feet (three meters) from south to north, covering an area of approximately 300 square feet (27 square meters). The total dimensions of the site were not established as part of this study.

The surface collection is provided in Table 5.19-1. The two surface locations at SDI-14,233 yielded a total of five artifacts, consisting of one flake, two pieces of debitage, one retouched flake, and one chopper. The lithic materials recovered from the surface collection consist of one specimen of fine-grained metavolcanic material and four specimens of a medium-grained metavolcanic rock. All of these materials are available in the vicinity of the project.

Subsurface Excavations

The potential for the existence of subsurface deposits at SDI-14,223 was investigated with the excavation of a series of five shovel tests. The locations of the tests are shown in Figure

5.19-1. All of these tests were excavated to a depth of 30 centimeters. Of the five shovel tests excavated, none yielded cultural materials. The shovel test excavations are detailed in Table 5.19-2.

Because the shovel tests did not reveal any evidence of a subsurface deposit, a test unit was not excavated as part of the site evaluation. The potential does exist for the presence of subsurface deposits north of the APE, where a larger surface scatter was observed, and the site appears to be less disturbed.

5.19.3 Laboratory Analysis

The laboratory analysis for SDI-14,233 included the standard procedures described in Section 4.2 of this report. All of the artifacts recovered from the field investigations conducted at the site were returned to the laboratory to be cleaned as necessary, cataloged, and analyzed. The total collection of cultural materials from SDI-14,233 consisted of five specimens, including three lithic production artifacts (one flake and two pieces of debitage), one precision tool (a retouched flake), and one percussion tool (a chopper).

5.19.4 Discussion

The testing of SDI-14,233 demonstrated that the surface expression of lithic artifacts was not accompanied by a subsurface deposit within the APE. The assessment of the site according to the criteria listed in Section 3.0 (integrity, variability, age, and function) is provided below:

- Integrity:* SDI-14,233 is characterized as a surface scatter of cultural materials. The site area within the pipeline APE has been disturbed by agricultural use and the grading of the dirt access road to the Rock Mountain Quarry. The previous impacts have significantly affected the site's integrity by disturbing the horizontal and vertical association of artifacts. Therefore, its integrity is poor.
- Variability:* The variability of a site consists of the horizontal and vertical separation of cultural materials that represent spatial, temporal, or cultural distinctions. The small quantity of cultural materials, the lack of a substantial subsurface deposit, and the disturbance within the APE, indicate that within the pipeline construction corridor, the site does not exhibit a high degree of variability.
- Age:* The age or cultural affiliation of SDI-14,233 could not be satisfactorily determined on the basis of the data collected; no culturally diagnostic artifacts were recovered.
- Function:* The artifacts recovered from SDI-14,233 are indicative of a temporary camp used to process food materials and to manufacture and maintain lithic tools. The function of this site is much the same as the majority of small sites situated along Salt Creek and the Otay River.

5.19.5 Summary

The testing of SDI-14,233 demonstrated that this site consisted of a sparse surface expression of lithic artifacts. The site area within the APE has produced artifacts that indicate the pipeline will pass through a prehistoric temporary camp that is associated with the subsistence pattern of either the Archaic (inland La Jolla Complex) or Late Prehistoric (Kumeyaay Indians) occupations of the area.

5.19.6 Evaluation

The field and laboratory studies conducted for Site SDI-14,233 characterize the site as a surface scatter of cultural materials; however, no evidence of a subsurface deposits was detected within the project APE. The artifacts observed at the site, notably north of the APE, indicates that the site was used primarily as a resource extraction site where site activities included the procurement and processing of food resources, as well as lithic tool production.

Based on the information derived from the testing program, the site area within the APE is not considered important according to CEQA criteria. Portions of the site located north of the APE may include important components of the site; however, investigations were generally limited to the area in or adjacent to the APE.

5.19.7 Impact Assessment

Site SDI-14,233 was tested because the alignment for the Salt Creek Sewer Project is tentatively designed to pass within the site boundaries. The pipeline trench is currently designed to stay within the dirt road that passes through the south of the site. Assuming that the trench is kept within the road and associated construction activities will be limited to an area not exceeding 20 feet on either side of the road, then the potential impacts to SDI-14,233 will be minimal. Because the portion of SDI-14,233 within the APE was evaluated as not important, the impacts to the site within the APE will not be significant.

5.19.8 Native American Heritage Values

The Native American community was not contacted with regard to this site, as no archaeological materials or remains of special heritage sensitivity to the Native American community were identified at SDI-14,233.

5.19.9 Mitigation Measures

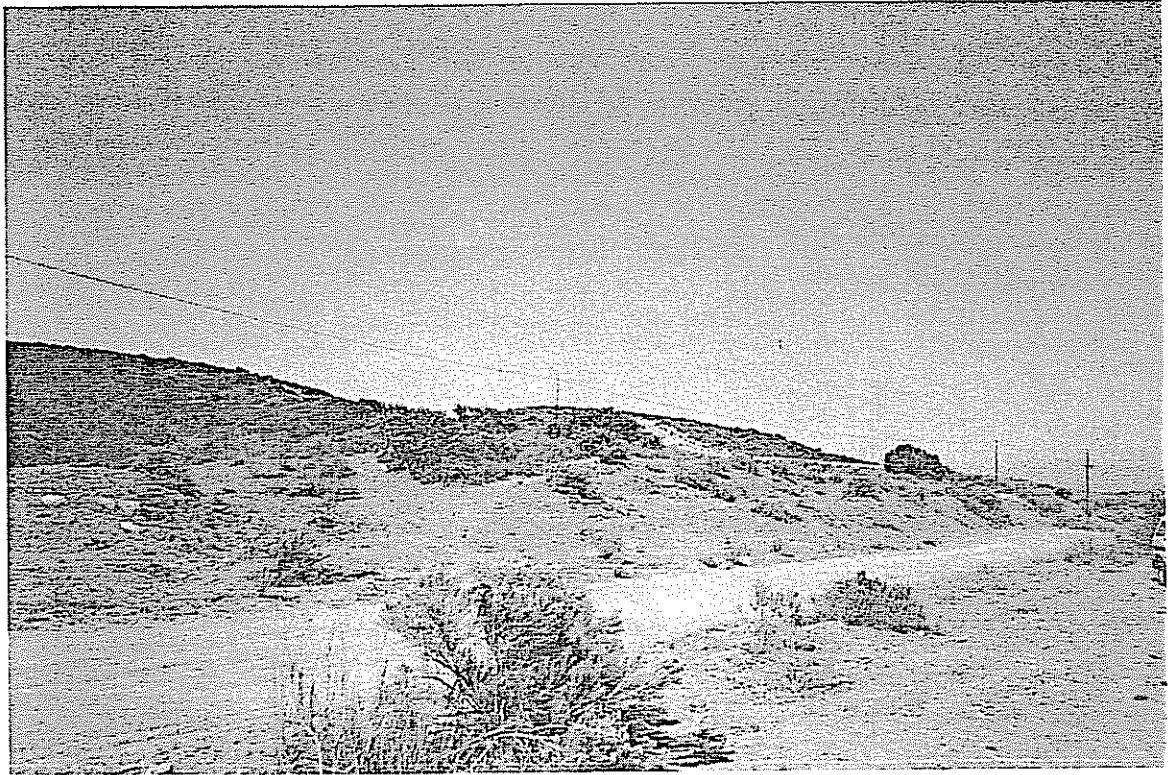
The pipeline construction will impact this site, but no mitigation measures for direct impacts will be necessary. The portion of Site SDI-14,233 within the APE has been determined to be not significant. Therefore, no mitigation measures will be required to reduce the significance of construction impacts. However, because of the potential for elements of the site to be masked or buried within the APE, monitoring of the trench excavation will be necessary. Also, because of the potential for significant components of the site outside of the APE, construction activities must

be contained to the APE, and the archaeological monitor will be required to ensure that construction activities will not intrude into any untested portions of SDI-14,233.

Figure 5.19-1

Excavation Location Map — SDI-14,233

**(Deleted for Public Review;
Bound Separately in Confidential Appendix)**



View of Site SDI-14,233, looking north.

TABLE 5.19-1

Surface Recovery Data
Site SDI-14,233

Recovery Location	Location from Datum A Azimuth/Range	Quantity	Recovery	Material	Cat. No.
1	225°/57 Feet	1	Retouched Flake	FGM*	19
2	220°/46 Feet	1	Chopper	MGM**	1
		2	Debitage	MGM	2
		1	Flake	MGM	3

*FGM=*Fine-Grained Metavolcanic*

**MGM=*Medium-Grained Metavolcanic*

TABLE 5.19-2

Shovel Test Excavation Data
Site SDI-14,233

Shovel Test	Location from Datum A Azimuth/Range	Depth	Recovery
1	88°/87 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
2	92°/52 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
3	165°/28 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
4	230°/58 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
5	235°/127 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery

5.20 SITE SDI-14,229

5.20.1 Site Description

Site SDI-14,229 was recorded as a prehistoric lithic scatter site located on the east side of Salt Creek Canyon. The site lies on a slope above Salt Creek. The site has been impacted by grazing and, more substantially, by a dirt road that passes through the site area from Salt Creek to the mesa east of Salt Creek. The setting of the site is shown in a photograph of the site area provided in Plate 5.20–1. A dirt road, which has disturbed the site, passes through the site parallel to Salt Creek. The general location of this resource is shown in Figure 5.0–1. This site is situated along the sewer lateral that will service the Olympic Training Center.

The testing program at SDI-14,229 consisted of the mapping and recovery of surface artifacts and the excavation of six shovel tests. Testing methods and unit sizes were consistent with those discussed in the methodology section (Section 4.0). The field investigations at this site were conducted in October, 2000. All artifacts recovered during the field investigations were subjected to the laboratory analysis procedures described in Section 4.2 of this report.

5.20.2 Description of Field Investigations

The field investigations at SDI-14,229 were conducted using the standard methodologies described in Section 4.1. The site was disturbed by grazing and the grading of a dirt road through the center of the site. The APE for the project passes through the center of SDI-14,229, and all field investigations were focused on the general area of potential impact.

Surface Mapping, Recording, and Collection

The location from which the single surface artifact was recovered at SDI-14,229 is shown in Figure 5.20–1. The surface collection data is provided in Table 5.20–1. The single artifact recovered from SDI-14,229 was one fine-grained metavolcanic core. Other artifacts were observed outside of the APE; however, grading disturbance has scraped most of the surface dirt and associated artifacts from the area in the center of the site.

Subsurface Excavations

The potential for the existence of subsurface deposits at SDI-14,229 was investigated with the excavation of a series of six shovel tests. The locations of the tests are shown in Figure 5.20–1. All of these tests were excavated to a minimum depth of 30 centimeters. Of the six shovel tests excavated, none yielded cultural materials. The shovel test excavations are detailed in Table 5.20–2.

Because the shovel tests did not reveal any evidence of a subsurface deposit, a test unit was not excavated as part of the site evaluation. The potential does exist for the presence of subsurface deposits west of the APE, where a larger surface scatter was observed.

5.20.3 Laboratory Analysis

The artifact recovered from the field investigations was returned to the laboratory to be cleaned as necessary, cataloged, and analyzed. The core was derived from felsite, a common fine-grained metavolcanic rock in the area of the site.

5.20.4 Discussion

The testing of SDI-14,229 demonstrated that the surface expression of lithic artifacts was not accompanied by a subsurface deposit within the APE. The assessment of the site according to the criteria listed in Section 3.0 (integrity, variability, age, and function) is provided below:

Integrity: SDI-14,229 is characterized as a surface scatter of cultural materials. The site area within the pipeline APE has been disturbed by grazing and a dirt road that passes through the site. The previous impacts have significantly affected the site's integrity by disturbing the horizontal association of artifacts. Therefore, its integrity is poor.

Variability: The variability of a site consists of the horizontal and vertical separation of cultural materials that represent spatial, temporal, or cultural distinctions. The small quantity of cultural materials, the lack of a substantial subsurface deposit, and the disturbance within the APE, indicate that within the pipeline construction corridor, the site does not exhibit a high degree of variability.

Age: The age or cultural affiliation of SDI-14,229 could not be satisfactorily determined on the basis of the data collected; no culturally diagnostic artifacts were recovered.

Function: The artifact recovered from SDI-14,229 suggests that the site was used to acquire and manufacture lithic tools. The function of this site is much the same as the majority of small sites situated along the mesa margins surrounding the Otay River drainage.

5.20.5 Summary

The testing of SDI-14,229 demonstrated that this site consisted of a sparse surface expression of lithic artifacts. The pipeline APE will pass through a prehistoric lithic processing site that is associated with the subsistence pattern of either the Archaic (inland La Jolla Complex) or Late Prehistoric (Kumeyaay Indians) occupations of the area.

5.20.6 Evaluation

The field and laboratory studies conducted for Site SDI-14,229 characterized the site as a surface scatter of cultural materials; however, no evidence of a subsurface deposit was detected within the project APE. Based on the information derived from the testing program, the site area

within the APE is not considered important according to CEQA criteria. Portions of the site located west of the APE may include important components of the site; however, investigations were generally limited to the area in or adjacent to the APE.

5.20.7 Impact Assessment

Site SDI-14,229 was tested because the alignment for the Olympic Training Center lateral of the Salt Creek Sewer Project is tentatively designed to pass within the site boundaries. The pipeline trench is currently designed to stay within the dirt road that passes through the center of the site. Assuming that the trench is kept within the road and associated construction activities will be limited to an area not exceeding 20 feet on either side of the road, then the potential impacts to SDI-14,229 will be minimal. Because the portion of SDI-14,229 within the APE was evaluated as not important, the impacts to the site within the APE will not be significant.

5.20.8 Native American Heritage Values

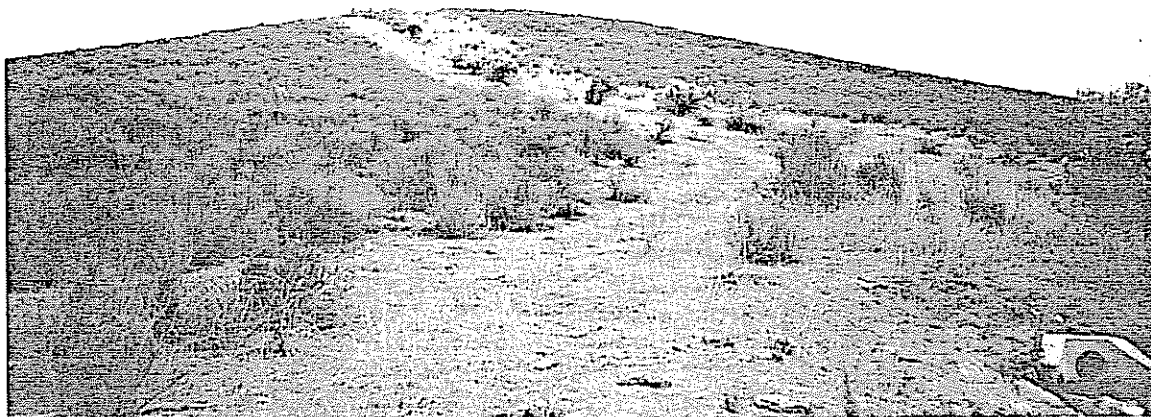
The Native American community was not contacted with regard to this site, as no archaeological materials or remains of special heritage sensitivity to the Native American community were identified at SDI-14,229.

5.20.9 Mitigation Measures

The pipeline construction will impact this site, but no mitigation measures for direct impacts will be necessary. The portion of Site SDI-14,229 within the APE has been determined to be not significant. Therefore, no mitigation measures will be required to reduce the significance of construction impacts. However, because of the potential for elements of the site to be masked or buried within the APE, monitoring of the trench excavation will be necessary. Also, because of the potential for significant components of the site outside of the APE, construction activities must be contained to the APE, and the archaeological monitor will be required to ensure that construction activities will not intrude into any untested portions of SDI-14,229.

Figure 5.20-1
Excavation Location Map — SDI-14,229

**(Deleted for Public Review;
Bound Separately in Confidential Appendix)**



View of Site SDI-14,229, looking north.

View of Site SDI-14,229, looking east.

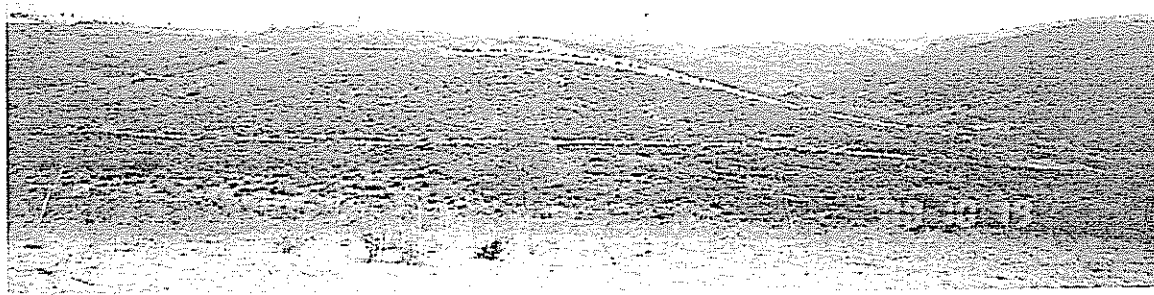


Plate 5.20-1

TABLE 5.20-1

Surface Recovery Data
Site SDI-14,229

Recovery Location	Location from Datum A Azimuth/Range	Quantity	Recovery	Material	Cat. No.
1	0°/0 Feet	1	Core	FGM*	1

*FGM=*Fine-Grained Metavolcanic*

TABLE 5.20-2Shovel Test Excavation Data
Site SDI-14,229

Shovel Test	Location from Datum A Azimuth/Range	Depth	Recovery
1	47°/57 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
2	13°/143 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
3	6°/227 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
4	4°/298 Feet	0-10 cm. 10-20 cm. 20-30 cm. 30-40 cm.	No Recovery No Recovery No Recovery No Recovery
5	3°/378 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery
6	4°/473 Feet	0-10 cm. 10-20 cm. 20-30 cm.	No Recovery No Recovery No Recovery

6.0 SITE INTERPRETATIONS AND GENERAL RESEARCH CONCLUSIONS

The testing program for the Salt Creek Sewer Project resulted in the analysis of several sites located within the Salt Creek, Wolf Creek, and Otay River drainages. Although several sites were studied, the reality of the program is that the APE for the project consistently followed existing graded dirt roads within moderate to intensely disturbed areas. Therefore, the testing program did not analyze any sites that actually possessed much potential for important artifact recoveries.

The majority of the sites (65%, N=13) studied produced less than five artifacts from either the surface collection or the subsurface testing. Only SDI-12,809 produced a large quantity of artifacts, which is attributable to the status of this site as a significant multi-component prehistoric occupation location. No intact subsurface deposits were present within the collection of sites studied, and no positive shovel tests or test units produced datable material or temporally sensitive artifacts, with the exception of six pottery shards.

Given the sparse recovery from the sites and the lack of any meaningful patterns of cultural materials, the research objectives have largely been negated. The analysis of subsistence patterns focused on Archaic or Late Prehistoric site locations along the drainages could not be advanced, because site chronology could not be established at all but two of the sites. Assuming that most sites are affiliated with the Archaic Period, the purpose of the sites in a foraging subsistence is difficult to determine, as the number of artifacts available for study was very small, and the variety of artifact types was also limited. Artifacts recovered during this program were dominated by lithic production waste, which represented 86.33% (N=821) of the total recovery. Lithic artifact production and maintenance of tools is assumed to have been a common activity during the use of any sites within the study area. Other tool types represented in the collection included a small number of milling tools, primarily recovered from SDI-12,809, and precision tools, including scrapers and utilized/retouched flakes. No projectile points were present in the recovery. The artifacts in the collection are common to the prehistoric typology in this area and generally confirm that the sites focused on food gathering opportunities along the major drainages. Beyond this affirmation of site use, no other research questions could be considered, as no faunal material, trade material, or datable material was present in the collection.

7.0 SUMMARY OF MANAGEMENT CONCLUSIONS

The testing program was conducted in accordance with the environmental guidelines of the City of Chula Vista and in compliance with CEQA of 1970, as amended. The purpose of the program was to identify cultural resources within the APE and determine if any important elements of those cultural sites would be directly or indirectly impacted by the construction of the pipeline. The following sections will summarize the testing results provided in Sections 5.1 through 5.20 and assess impacts for the individual pipeline segments (or "Reaches") from Salt Creek to Interstate 5.

7.1 Existing Cultural Resources

Within the APE, 28 archaeological sites were recorded and subsequently reviewed to assess potential impacts. The sites within the APE are listed in Table 7.1-1, including the testing status of the sites and the "reach" or pipeline section within which the individual sites fall. The testing program conducted for the Salt Creek Sewer Project involved some level of fieldwork at 20 sites. The remaining eight sites were not tested because of existing impacts from development or because the sites had been previously tested for significance evaluations.

TABLE 7.1-1

Cultural Resources Within the Salt Creek Sewer APE

<u>Site</u>	<u>Status</u>	<u>Reach</u>
SDI-4732	Tested	5
SDI-4738	Tested	Wolf Canyon
SDI-7217B	Tested	4
SDI-8065	Previously Tested, Disturbed	9
SDI-8912	Previously Tested, Disturbed	9
SDI-11,145	Previously Tested	9
SDI-11,146	Previously Tested	9
SDI-11,362	Not Tested, Disturbed	8
SDI-11,364	Tested	7
SDI-11,374	Tested	7
SDI-11,378	Tested	Wolf Canyon
SDI-11,962	Not Tested, Disturbed	9
SDI-11,963	Not Tested, Disturbed	9
SDI-12,278	Tested	3
SDI-12,288	Tested	Wolf Canyon
SDI-12,291	Tested	8
SDI-12,293	Tested	8
SDI-12,809	Tested	7
SDI-14,203	Not Tested, Disturbed	8
SDI-14,204	Tested	Wolf Canyon
SDI-14,208	Tested	6
SDI-14,211	Tested	Wolf Canyon

SDI-14,218	Tested	5
SDI-14,220	Tested	4
SDI-14,221	Tested	4
SDI-14,225	Tested	4
SDI-14,229	Tested	Olympic Training Center
SDI-14,233	Tested	7

Four of the 28 sites within or adjacent to the APE were not tested due to the extent of modern impacts. These sites are designated in Table 7.1-1 as "Not Tested, Disturbed." The four recorded sites that were not tested are essentially located in areas which have been graded and developed and lie within Reach 9. No indications of any cultural materials were observed at the locations of these four sites, and testing was not necessary to determine that the sites did not possess any research potential that might have been a source for consideration of importance. No further archaeological studies are necessary to determine that these four sites are not significant.

Four sites located just west of Otay Ranch, along Otay Valley Road, were previously tested by BFSa for the Otay Valley Road Widening Project (Smith 1989). The testing program in 1989 provided sufficient data to determine that these sites, SDI-8065, SDI-8912, SDI-11,145 and SDI-11,146, were not important resources. These sites will not be impacted by the construction of the pipeline in Otay Valley Road, as they are either situated on a terrace north of Otay Valley Road or were destroyed by the construction of the auto dealerships east of Interstate 805 and south of Otay Valley Road. No further archaeological study will be needed to conclude that the project will not represent a significant impact to these four sites.

The results of the significance testing of the cultural resources within each of the project "reach" sections is provided in the following section. The maps and other confidential data regarding the testing program are provided in the archaeological technical report.

Reach 1

No archaeological study was conducted in Reach 1 because this is an existing pipeline.

Reach 2

No archaeological study was conducted in Reach 2 because this is an existing pipeline.

Reach 3

A single site, **Site SDI-12,278**, is located within Reach 3.

- A review of **Site SDI-12,278** determined that the site is within the project APE. The site is recorded as a lithic scatter, with ground stone tools and evidence of fire hearths. The pipeline will pass along the eastern side of the site. The site has been previously impacted by cultivation and grazing associated with the long period of agricultural use on Otay Ranch. Testing of the portion of the site within the APE consisted of a collection of surface artifacts and the excavation of six shovel tests. All of the shovel tests were negative. The

field study of the site resulted in the recovery of five lithic specimens, primarily lithic production waste. Based on the investigations of SDI-12,278, the portion of the site within the project APE has been evaluated as not important.

Reach 4

Four sites are located within Reach 4: **SDI-7217B**, **SDI-14,220**, **SDI-14,221**, and **SDI-14,225**.

- **Site SDI-7217B** is recorded as a sparse lithic scatter situated adjacent to Salt Creek. A survey of the site determined that the project APE will pass through the central area of the site. The site has been extensively impacted by cultivation and grazing associated with the long period of agricultural use on Otay Ranch, but more importantly, by the installation of the San Diego Aqueduct and associated roads which have significantly affected the site. Testing of the portion of the site within the APE consisted of a collection of surface artifacts and the excavation of 11 shovel tests. All of the shovel tests were negative. The field study of the site resulted in the recovery of one basalt flake. Based on the investigations of SDI-7217B, the portion of the site within the project APE has been evaluated as not important.
- **Site SDI-14,220** is recorded as a lithic scatter situated adjacent to Salt Creek. Testing of this site determined that the project APE will pass through the eastern side of the site. The site has been impacted by cultivation and grazing associated with the long period of agricultural use on Otay Ranch, as well as a dirt road that passes through the site area. Testing of the portion of the site within the APE consisted of a collection of surface artifacts and the excavation of five shovel tests; all of the shovel tests were negative. The field study of the site resulted in the recovery of one flake and one core. Based on the investigations of SDI-14,220, the portion of the site within the project APE has been evaluated as not important.
- **Site SDI-14,221** is recorded as a sparse lithic scatter situated adjacent to Salt Creek. The field inspection of this site determined that the project APE will pass through the eastern side of the site. The site has been impacted by cultivation and grazing associated with the long period of agricultural use on Otay Ranch as well as the grading of a dirt road. Testing of the portion of the site within the APE consisted of a collection of surface artifacts and the excavation of five shovel tests. All of the shovel tests were negative. The field study of the site resulted in the recovery of 15 artifacts, all lithic production waste (three cores, 11 flakes, and one piece of debitage). Based on the investigations of SDI-14,221, the portion of the site within the project APE has been evaluated as not important.
- **Site SDI-14,225** is recorded as a lithic scatter situated on the slopes overlooking the Salt Creek drainage. A review of this site determined that an option of the project APE will pass through the central area of the site. The site has been extensively impacted by cultivation, but more importantly, by the installation of the San Diego Aqueduct and

associated access roads. Testing of the portion of the site within the APE consisted of the mapping of the site and the excavation of nine shovel tests, all of which were negative. The field study of the site did not result in the recovery of any cultural materials. Based on the investigations of SDI-14,225, the portion of the site within the project APE has been evaluated as not important.

Reach 5

Two sites are located within Reach 5: **SDI-4732** and **SDI-14,218**.

- **Site SDI-4732** is recorded as a lithic scatter situated adjacent to Salt Creek, near the confluence of Salt Creek and the Otay River. The survey of the site area determined that the project APE will pass along the western side of the site. The site has been impacted by cultivation and grazing, and by the grading of a dirt road through the site. Testing of the portion of the site within the APE consisted of a collection of surface artifacts, and the excavation of 14 shovel tests (12 were negative) and a test unit. The field study of the site resulted in the recovery of 39 artifacts, all lithic production waste. Based on the investigations of SDI-4732 and the level of existing impacts, the portion of the site within the project APE has been evaluated as not important.
- **Site SDI-14,218** is recorded as a lithic scatter situated on the Otay River floodplain, near the confluence of Salt Creek and the Otay River. This site has been determined to be within the project APE, which will pass along the western side of the site. The site has been impacted by cultivation and grazing, and by the grading of a dirt road through the site. Testing of the portion of the site within the APE consisted of a collection of surface artifacts and the excavation of four shovel tests. All of the shovel tests were negative. The field study of the site resulted in the recovery of two flakes and one hammerstone from the surface of the site. Based on the investigations of SDI-14,218, the portion of the site within the project APE has been evaluated as not important.

Reach 6

One site is located within Reach 6: **SDI-14,208**.

- **Site SDI-14,208** is recorded as a large, dispersed lithic scatter with flaked and ground stone tools, located on the north side of the Otay River floodplain. The analysis of this site has been determined to be within the project APE, which will pass through the center of the site. The site has been impacted by cultivation and grazing, and by the grading of a dirt road through the site. Sand and gravel mining of the floodplain has also impacted the site. Testing of the portion of the site within the APE consisted of a collection of surface artifacts and the excavation of 30 shovel tests. None of the excavations produced any cultural materials. The field study of the site resulted in the recovery of 37 lithic artifacts. The recovery was dominated by lithic production waste, which accounted for 78.38% of the collection (N=29). The remainder of the recovery consisted of one hammerstone, two

scrapers, two retouched flakes, and three retouched debitage. Based on the investigations of SDI-14,208, the portion of the site within the project APE has been evaluated as not important.

Reach 7

Four sites are located within Reach 7: **SDI-11,364, SDI-11,374, SDI-12,809, and SDI-14,233.**

- **Site SDI-11,364** is recorded as a bedrock milling feature and associated artifacts located on the north side of the Otay River floodplain. A review of this site determined that the project APE will pass through the center of the site. The site has been impacted by sand and gravel mining in the Otay River floodplain, as well as the grading of a dirt road through the center of the site. Testing of the portion of the site within the APE consisted of a collection of surface artifacts and the excavation of six shovel tests. All of the shovel tests were negative. The field study of the site resulted in the recovery of a single basalt flake; however, no evidence of the recorded milling feature was observed. Most likely, the milling feature was removed or buried by the sand and gravel mining. In fact, the site appears to have been intensely disturbed in the area of the dirt road which passes east to west through the site, although portions of the site to the north of the dirt road are much less impacted. Based on the investigations of SDI-11,364, the portion of the site within the project APE has been evaluated as not important.
- **Site SDI-11,374** is recorded as a lithic scatter located on the north side of the Otay River floodplain. The project APE will pass along the north side of the site. The site has been impacted by road grading and sand and gravel mining in the Otay River floodplain. Testing of the portion of the site within the APE consisted of a collection of surface artifacts and the excavation of four shovel tests. All of the shovel tests were negative. The field study of the site resulted in the recovery of a single felsite core. Based on the investigations of SDI-11,374, the portion of the site within the project APE has been evaluated as not important.
- **Site SDI-12,809** is recorded as a major prehistoric village site primarily located on a terrace north of the Otay River floodplain. This site has been studied previously by the field school of Southwestern College, and the information available indicates the site contains a deep cultural deposit spanning the Archaic and Late Prehistoric Periods in this region. Testing of this site determined that the project APE will pass along the southern edge of the site. The site has been impacted by cultivation. Along the dirt road that represents the proposed pipeline alignment, sand and gravel mining has significantly impacted the southern edge of the site. Testing of the portion of the site within the APE consisted of a collection of surface artifacts, and the excavation of 44 shovel tests and two test units. The field study of the site resulted in the recovery of 813 artifacts and 22.7 grams of shell. The majority of artifacts were recovered from the surface collection, which accounted for 85.61% (N=696) of the total recovery. The shovel tests produced 2

artifacts, which represented 2.58% of the recovery, and the test units completed the artifact recovery with 96 specimens (11.81% of the recovery). The materials recovered from the site represented a wide spectrum of artifact types, confirming the status of the site as a significant village location. Artifact types included ground stone tools (six manos and two metate fragments), lithic production waste (61 cores, 236 pieces of debitage, and 399 flakes), percussion tools (one chopper and 29 hammerstones), precision tools (43 retouched flakes/debitage, six scrapers, and 11 utilized flakes/debitage), multi-use tools (13 hammer/cores), and six pottery shards. Only nine of the shovel tests were positive, and these were all located just up slope of the dirt road where the pipeline is planned. Half of the shovel test recovery (11 of 21 artifacts) was recovered from Shovel Test 4, which was also situated on the terrace above the dirt road and close to the center of the site. Based on the investigations of SDI-12,809, the portion of the site within the project APE has been evaluated as not important due to existing impacts; however, areas of this site immediately north of the APE contain extensive prehistoric deposits which are considered to be important and must be avoided.

- **Site SDI-14,233** is recorded as a lithic tool and shell scatter located on the north side of the Otay River floodplain. The project APE will pass along the southern side of the site. The site has been impacted by cultivation and sand and gravel mining in the Otay River floodplain. Testing of the portion of the site within the APE consisted of a collection of surface artifacts and the excavation of five shovel tests. All of the shovel tests were negative. The field study of the site resulted in the recovery of one flake, two pieces of debitage, one retouched flake, and one chopper, all from the surface collection. Based on the investigations of SDI-14,233, the portion of the site within the project APE has been evaluated as not important.

Reach 8

Four sites are located within Reach 8: **SDI-11,362**, **SDI-12,291**, **SDI-12,293**, and **SDI-14,203**.

- **Site SDI-11,362** is recorded as a lithic scatter located east of the mouth of Wolf Canyon. This site has been destroyed by the rock mining operation at the Rock Mountain Quarry. A review of this site was sufficient to conclude that no elements of this site remain, and the site is evaluated as not important.
- **Site SDI-12,291** is recorded as a lithic scatter located on the north side of the Otay River floodplain, near the mouth of Wolf Canyon. The project APE will pass along the southern side of the site. The site has been impacted by road grading and sand and gravel mining in the Otay River floodplain. Testing of the portion of the site within the APE consisted of a collection of surface artifacts and the excavation of 17 shovel tests. Only two of the shovel tests were positive. The field study of the site resulted in the recovery of 24 artifacts. Twenty-two artifacts (all lithic production waste) were collected from the surface of the

site. Based on the investigations of SDI-12,291, the portion of the site within the project APE has been evaluated as not important.

- **Site SDI-12,293** is recorded as a lithic scatter located on the north side of the Otay River floodplain. The initial review of this site determined that the project APE will pass along the southern side of the site. The site has been impacted by the grading of the dirt road to the Rock Mountain Quarry, and by sand and gravel mining in the Otay River floodplain. Testing of the portion of the site within the APE consisted of the mapping of the site area and the excavation of 18 shovel tests, all of which were negative. The field study of the site area within the APE did not result in the recovery of any artifacts. The previous impacts to the site from road grading has destroyed the southern portion of the site, including the area within the APE. Based on the investigations of SDI-12,293, the portion of the site within the project APE has been evaluated as not important.
- **Site SDI-14,203** is recorded as a lithic scatter located on the north side of the dirt road leading to the Rock Mountain Quarry. The project APE will pass along the southern tip of the site. The site within the APE has been completely impacted by grading of the dirt road to the quarry. The site record indicates that surface artifacts were once present in the area that corresponds to the APE; however, impacts have removed the portion of the site within the APE. No testing was necessary to determine that no important elements of the site will be impacted within the project APE.

Reach 9

Six sites are located within Reach 9: **SDI-8065, SDI-8912, SDI-11,145, SDI-11,146, SDI-11,962, and SDI-11,963**. Two additional sites, **SDI-5513** and **SDI-7455**, are located within Reach 9, but are situated west of Interstate 5. The project APE west of Interstate 5 may change, and therefore, the two sites were not included in the current testing program until the alignment of the pipeline west of Interstate 5 is set.

- **Site SDI-8065** is recorded as a lithic and shell scatter located south of Otay Valley Road and east of Interstate 805. This site has been destroyed by development of both roads and car dealerships. The site was tested in 1989 by BFSa as part of the Otay Valley Road Widening Project. The testing program indicated the site contained only sparse subsurface materials within the APE south of Otay Valley Road. A review of this site was sufficient to conclude that no elements of this site remain within the APE, and the site is evaluated as not important.
- **Site SDI-8912** is recorded as a lithic and shell scatter located between Otay Valley Road and the Otay River. This site has been previously tested by BFSa in 1989 for the Otay Valley Road Widening Project. The testing program focused on an area 40 feet wide along the south side of Otay Valley Road and discovered that no significant deposits exist near the road. The surface area of the site produced flakes, scrapers, and hammerstones. This site has been destroyed by development of commercial lots and streets. A review of this site

was sufficient to conclude that no elements of this site remain, and the site is evaluated as not important.

- **Site SDI-11,145** is recorded as a lithic scatter located on the north side of the Otay Valley Road. Portions of the site were previously tested in 1989 by BFSa for the Otay Valley Road Widening Project. The surface collection in 1989 produced manos, metate fragments, hammerstones, shell, and a potsherd. Testing of the site indicated that a shallow subsurface deposit was present on the bluff north and up slope from Otay Valley Road. The area which produced the surface collection is outside of the current APE. The project APE will pass along the southern side of the site. The site has been impacted by grading and construction of Otay Valley Road. This site has been previously tested and no additional testing was necessary to determine that no important elements of the site will be impacted within the project APE.
- **Site SDI-11,146** is recorded as a lithic scatter located on the north side of the Otay Valley Road. Portions of the site were previously tested in 1989 by BFSa for the Otay Valley Road Widening Project. The surface collection from the site in 1989 consisted of a small quantity of lithic artifacts, including a mano, a scraper, and lithic production waste. Subsurface testing did not reveal any cultural deposits. The project APE will pass along the southern side of the site. The site has been impacted by grading and construction of Otay Valley Road. This site has been previously tested, and no additional testing was necessary to determine that no important elements of the site will be impacted within the project APE.
- **Site SDI-11,962** is recorded as a small disturbed lithic scatter located south of Main Street and west of Beyer Boulevard. The project APE will pass along the north side of the site. The site has been impacted by grading and clearing, and no evidence of the site was observed in or near the APE during the alignment survey. Testing was not necessary to determine that no important elements of the site will be impacted within the project APE.
- **Site SDI-11,963** is recorded as a shell scatter located between Hollister Street and Interstate 5. The project APE will pass along the north side of the site; however, since the site was never tested, the boundaries of the site were tentative. A review of the site within the APE indicated that the site has been impacted by grading, and the APE contains mounds of disturbed dirt. Based on the lack of any cultural materials and the extent of previous impacts, no testing was necessary to determine that no important elements of the site will be impacted within the project APE.

Wolf Canyon Spur

Five sites are located within the proposed alignment of the Wolf Canyon branch of the Salt Creek Sewer: **SDI-4738, SDI-11,378, SDI-12,288, SDI-14,204, and SDI-14,211.**

- **Site SDI-4738** is recorded as a lithic scatter located east of the mouth of Wolf Canyon. This site lies primarily adjacent to the APE, and while artifacts were observed just beyond

the limits of the APE, none were observed within the APE, which is likely due to previous impacts to the site. To test the area of SDI-4738 within the APE, a total of 15 shovel tests were excavated, none of which produced any artifacts. The investigations of this site indicated that no portion of the resource remains within the APE due principally to the extent of previous impacts. Portions of the site up slope from the floodplain appear to be more intact and likely retain the potential for subsurface deposits. Based on the work conducted at the site, SDI-4738 is evaluated as not important.

- **Site SDI-11,378** is recorded as a dense lithic scatter located east of the mouth of Wolf Canyon. This site has been disturbed by the rock mining operation at the Rock Mountain Quarry and the grading of the dirt road that passes up Wolf Canyon. The site area within the Wolf Canyon APE was tested through the mapping of the site and the excavation of six shovel tests, all of which were negative. Surface artifacts were not discovered within the project APE, due to the extent of previous site disturbance; however, artifacts were observed up slope of the APE where the impacts have not been as severe. The shovel tests did not result in the recovery of any cultural materials. Based on the study of the site, the resource is evaluated as not important.
- **Site SDI-12,288** is recorded as a lithic scatter with tools on the slopes of Wolf Canyon, down slope from the Otay Ranch Farm Complex. The project APE will pass along the north side of the site. The site has been impacted by cultivation and grazing associated with the long period of agricultural use on Otay Ranch. Testing of the portion of the site within the APE consisted of a collection of surface artifacts and the excavation of ten shovel tests. All of excavations were negative. The field study of the site resulted in the recovery of a single metate fragment and 4.2 grams of marine shell. Based on the investigations of SDI-12,288, the portion of the site within the project APE has been evaluated as not important.
- **Site SDI-14,204** is recorded as a lithic scatter on the slopes of Wolf Canyon, near the south end of the canyon. The project APE will pass along the western most side of the site. The area of the APE corresponds to the graded dirt road that passes up Wolf Canyon. The site has been impacted by cultivation and grazing associated with the long period of agricultural use on Otay Ranch, and within the APE, the grading of the dirt road has severely impacted any portions of the site that may have been present. Testing of the portion of the site within the APE consisted of the mapping of the site and the excavation of eight shovel tests, all of which were negative. The field study of the site did not include the recovery of any artifacts, although cultural materials were visible on the eastern site area. Based on the investigations of SDI-14,204, the portion of the site within the project APE has been evaluated as not important.
- **Site SDI-14,211** is recorded as a lithic scatter on the slopes of Wolf Canyon, approximately 1,500 feet north of the mouth of the canyon. The project APE will pass along the east side of the site. The site has been impacted by cultivation and grazing associated with the long period of agricultural use on Otay Ranch, and within the APE, the

grading of the dirt road has severely impacted any portions of the site that may have been present. Testing of the portion of the site within the APE consisted of the mapping of the site and the excavation of ten shovel tests, all of which were negative. The field study of the site did not include the recovery of any artifacts, although cultural materials were visible on the eastern site area. Based on the investigations of SDI-14,211, the portion of the site within the project APE has been evaluated as not important.

- Olympic Training Center Lateral
- One previously recorded site is situated along the sewer line for the training center to the Salt Creek sewer main line: **SDI-14,229**.
 - **Site SDI-14,229** is a lithic scatter located on moderate to steep slopes east of Salt Creek. A graded dirt road, which represents the sewer alignment, passes through the site. The analysis of the site within the APE included the recovery of one core from the surface of the site and the excavation of six shovel tests, all of which were negative. Based on the study of the site, the area within the APE is not important and construction of this line within the APE will not represent a significant impact to this site.

7.2 Criteria for Determining Significance

This cultural resource study was conducted in accordance with the environmental guidelines of the City of Chula Vista and in compliance with the CEQA. The archaeological sites were evaluated to determine if any important elements of the sites were located within the project APE. Because most of the sites were recorded as lithic scatters, the primary component that could be considered important at most of the sites would have been the presence of subsurface deposits that represented research potential.

In order to evaluate sites, various specific site characteristics needed to be examined, including the presence or absence of subsurface deposits. If such deposits are present, then their integrity, variability, age, and function must be assessed. For the purpose of this study, the definitions of integrity, variability, age, and function are as follows:

Integrity: *Integrity is the degree to which a subsurface deposit remains intact and undisturbed. If the deposits have been disturbed, then the extent to which they retain information to address important research questions must be determined.*

Variability: *The variability of a deposit is indicated by differences in a site's stratigraphic pattern, which reflects changes that have occurred at the site through time. Greater differences between artifacts from different levels, whether in quantity, type, or cultural affiliation, signify more dynamic site*

variability and a greater possibility that the site offers an opportunity to address important research questions relating to human or environmental change or continuity through time.

Age: Age refers to the placement of a deposit in a particular time sequence, which is essential to the assignment of cultural affiliation and chronology. Age is generally determined by radiocarbon dating, although the recognition of index artifacts (i.e., artifacts that are time-sensitive or culture-specific) at a site can also provide a date. If obsidian is present at the site, hydration studies can furnish relative dates for a site.

Function: Function is the role that a particular site played in the overall subsistence pattern of a group of inhabitants of an area. Assuming that the artifacts recovered from a site represent the range of activities that took place there, its function in the subsistence pattern of the occupants can be defined. The analysis of an assemblage should provide evidence of site activities. When this information is compared to information from other sites in the area, research questions that focus on intersite relationships and catchment theories can be addressed.

7.3 Cultural Resource Impacts

The project APE will impact 28 cultural resources, based upon the recorded locations of the sites. Four of these sites either could not be relocated or were definitely destroyed due to residential and street development. Aside from these four sites, the remaining 24 sites have been tested, 20 during the current study. The results of this study are that within the APE, no important archaeological deposits or sensitive features were identified. Portions of the sites outside of the APE could retain important deposits; however, the testing for significance was limited to the APE.

The impacts to the archaeological sites will result from the excavation of trenches for the pipeline and other construction-related ground disturbance and road traffic. Because the portions of the archaeological sites located within the APE are not important, impacts resulting from the construction of the pipeline will not be significant.

7.4 Recommended Mitigation Measures

The study of the sites within the APE had concluded that no important elements of any of the archaeological sites are present within the APE. Therefore, direct impacts to the sites will not be significant. Given that the project will not represent a source of significant direct impacts, mitigation measures will not be required.


For any of the sites within the APE, there is the possibility that undetected buried portions of the sites may still exist. All of the sites have been affected to some degree by modern or historic land uses, which may have buried portions of the site that could be sensitive. Furthermore, for the sites located within the Otay Ranch boundaries, important elements of the sites may exist directly adjacent, but outside, of the APE. Any impacts to sites outside of the APE would represent a potential indirect impact that could be significant. In order to address indirect impacts, measures to mitigate such impacts will include the monitoring of all trenching and clearing activities during the pipeline construction. In the event that any undetected elements of the sites are encountered, construction should be halted at that location until the discovery can be evaluated and any mitigation measures implemented to reduce the significance of impacts.

8.0 PERSONNEL

All phases of work under this contract were directed by Brian F. Smith. The field and laboratory personnel consisted of Johnna L. Buysse, Charles P. Callahan, Devin A. Callahan, Sung An, Jeff Szymanski, Helen Wilson, Clarence Hoff, Richard Savitch, Kent Smolik, and Kimberly Wade. This report was written by Brian Smith. The graphics and production staff consisted of Samantha Stotts and Robert Hernandez.

9.0 CERTIFICATION

The information provided in this document is correct, to the best of my knowledge, and has been compiled in accordance with the guidelines of the City of Chula Vista.



Brian F. Smith

10/23/00
Date

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APPENDIX I

Artifact Catalog — SDI-12,809

Artifact Catalog

Site SDI-12,809

Cat. No.	Provenience	Datum	Location from Datum Azimuth/Range	Depth	Qty/ Weight	Recovery	Material
1	S-1	B	270°/237 Feet		2	Debitage	MGM*
2	"	"	"		1	Flake	MGM
3	S-2	B	307°/83 Feet		1	Core Fragment	FGM**
4	"	"	"		1	Debitage	FGM
5	"	"	"		2	Debitage	MGM
6	"	"	"		3	Flakes	MGM
7	S-3	B	271°/181 Feet		1	Debitage	Granite
8	"	"	"		1	Debitage	FGM
9	"	"	"		1	Flake	FGM
10	"	"	"		2	Debitage	MGM
11	"	"	"		1	Flake	Quartzite
12	S-4	B	303°/71 Feet		1	Flake	FGM
13	"	"	"		1	Hammerstone, Circular	MGM
14	"	"	"		1	Debitage	MGM
15	S-5	B	1°/115 Feet		1	Utilized Flake	FGM
16	"	"	"		1	Hammerstone, Spherical	MGM
17	"	"	"		1	Hammerstone Fragment, Undetermined	MGM
18	"	"	"		1	Flake	MGM
19	S-6	B	4°/77 Feet		1	Flake	FGM
20	"	"	"		1	Flake	MGM
21	S-7	B	345°/82 Feet		3	Flakes	FGM
22	"	"	"		2	Debitage	MGM
23	"	"	"		3	Flakes	MGM
24	S-8	B	14°/90 Feet		1	Debitage	MGM
25	"	"	"		1	Flake	MGM
26	S-9	B	19°/88 Feet		1	Hammer/Core, Circular	MGM
27	"	"	"		1	Flake	MGM
28	S-10	B	23°/139 Feet		1	Core	FGM
29	"	"	"		1	Debitage	MGM
30	"	"	"		2	Flakes	MGM
31	S-11	B	25°/161 Feet		1	Retouched Flake	FGM
32	S-12	B	32°/176 Feet		1	Flake Scraper	FGM
33	"	"	"		1	Core	MGM
34	"	"	"		1	Flake	MGM
35	S-13	B	33°/216 Feet		1	Core	FGM
36	"	"	"		1	Flake Scraper	MGM
37	"	"	"		1	Debitage	MGM

*MGM=Medium-Grained Metavolcanic

**FGM=Fine-Grained Metavolcanic

Cat. No.	Provenience	Datum	Location from Datum Azimuth/Range	Depth	Qty/ Weight	Recovery	Material
38	S-14	B	43°/463 Feet		1 Flake		MGM
39	S-15	B	43°/550 Feet		1 Retouched Flake Fragment		FGM
40	"	"	"		2 Flakes		MGM
41	S-16	B	46°/618 Feet		1 Core		MGM
42	S-17	B	49°/705 Feet		1 Flake		MGM
43	S-18	B	48°/737 Feet		1 Flake		FGM
44	"	"	"		2 Flakes		MGM
45	S-19	B	48°/753 Feet		1 Utilized Flake		FGM
46	"	"	"		1 Retouched Debitage		MGM
47	"	"	"		1 Retouched Flake		MGM
48	"	"	"		1 Retouched Flake Fragment		MGM
49	"	"	"		1 Debitage		MGM
50	"	"	"		3 Flakes		MGM
51	S-20	B	49°/760 Feet		1 Flake		MGM
52	S-21	B	48°/496 Feet		1 Hammer/Core, Single-Edged		Quartzite
53	S-22	B	267°/88 Feet		1 Core Fragment		FGM
54	S-23	B	260°/365 Feet		1 Flake		FGM
55	"	"	"		2 Flakes		MGM
56	S-24	B	259°/377 Feet		1 Flake		FGM
57	"	"	"		1 Flake		MGM
58	S-25	B	257°/389 Feet		1 Debitage		FGM
59	S-26	B	259°/434 Feet		1 Core		MGM
60	S-27	B	257°/473 Feet		1 Flake		MGM
61	S-28	B	257°/493 Feet		1 Flake		Quartzite
62	S-29	B	258°/515 Feet		2 Flakes		FGM
63	"	"	"		1 Hammerstone, Spherical		MGM
64	"	"	"		1 Flake		Quartzite
65	S-30	B	256°/529 Feet		1 Debitage		MGM
66	S-31	B	256°/624 Feet		1 Utilized Flake		MGM
67	"	"	"		1 Core		MGM
68	"	"	"		1 Debitage		MGM
69	"	"	"		1 Flake		MGM
70	S-32	B	256°/640 Feet		2 Flakes		FGM
71	"	"	"		1 Hammerstone Fragment, Undetermined		MGM
72	"	"	"		1 Hammer/Core Fragment		MGM
73	"	"	"		1 Debitage		MGM
74	S-33	B	253°/634 Feet		1 Debitage		MGM
75	"	"	"		1 Flake		MGM
76	S-34	B	253°/667 Feet		1 Debitage		MGM
77	S-35	B	256°/690 Feet		1 Flake		FGM
78	S-36	B	255°/818 Feet		1 Hammer/Core, Single-Edged		MGM
79	"	"	"		1 Flake		MGM
80	S-37	C	245°/16 Feet		1 Hammerstone, Spherical		MGM
81	S-38	C	257°/743 Feet		1 Domed Scraper		FGM
82	S-39	D	274°/82 Feet		1 Core		MGM

Cat. No.	Provenience	Datum	Location from Datum Azimuth/Range	Depth	Qty/Weight	Recovery	Material
83	S-40	D	277°/170 Feet		1	Flake	MGM
84	S-41	D	254°/373 Feet		1	Retouched Debitage Fragment	MGM
85	S-42	D	258°/362 Feet		1	Flake	FGM
86	"	"	"		1	Debitage	MGM
87	S-43	D	258°/430 Feet		1	Core	MGM
88	S-44	D	257°/451 Feet		1	Flake	MGM
89	S-45	D	253°/557 Feet		1	Debitage	MGM
90	S-46	D	252°/562 Feet		1	Debitage	FGM
91	"	"	"		1	Debitage	MGM
92	"	"	"		2	Flakes	MGM
93	S-47	D	252°/579 Feet		1	Retouched Flake	MGM
94	S-48	D	250°/672 Feet		1	Flake Scraper	FGM
95	"	"	"		2	Debitage	MGM
96	"	"	"	22.5 g.		Marine Shell	<i>Laevicardium</i> sp.
97	S-49	D	249°/683 Feet		1	Hammer/Core, Single-Edged	MGM
98	S-50	D	249°/726 Feet		1	Hammerstone Fragment, Undetermined	FGM
99	S-51	D	248°/740 Feet		1	Hammerstone Fragment Undetermined	MGM
100	"	"	"		1	Flake	MGM
101	S-52	D	248°/738 Feet		1	Mano, Uniface, Polished, Pecked	Granite
102	S-53	D	248°/807 Feet		1	Flake	MGM
103	S-54	D	247°/818 Feet		1	Flake	FGM
104	S-55	D	245°/845 Feet		1	Core	MGM
105	S-56	D	238°/1055 Feet		1	Debitage	FGM
106	"	"	"		1	Hammer/Core, Single-Edged	MGM
107	S-57	D	234°/1331 Feet		1	Core	MGM
108	S-58	G	262°/186 Feet		1	Flake	MGM
109	S-59	G	267°/435 Feet		1	Core Fragment	MGM
110	S-60	B	48°/765 Feet		1	Retouched Flake Fragment	FGM
111	"	"	"		1	Debitage	FGM
112	"	"	"		1	Flake	FGM
113	"	"	"		1	Retouched Flake	MGM
114	"	"	"		1	Retouched Flake Fragment	MGM
115	"	"	"		5	Debitage	MGM
116	"	"	"		13	Flakes	MGM
117	S-61	B	48°/713 Feet		2	Flakes	FGM
118	"	"	"		1	Debitage	MGM
119	"	"	"		2	Flakes	MGM
120	S-62	B	48°/691 Feet		1	Debitage	FGM
121	"	"	"		2	Flakes	FGM
122	"	"	"		1	Retouched Flake	MGM
123	"	"	"		1	Core	MGM
124	"	"	"		2	Debitage	MGM
125	"	"	"		2	Flakes	MGM

Cat. No.	Prov- enience	Datum	Location from Datum Azimuth/Range	Depth	Qty/ Weight	Recovery	Material
126	S-63	B	46°/683 Feet		1	Retouched Flake	FGM
127	"	"	"		1	Flake	MGM
128	S-64	B	49°/746 Feet		1	Flake	FGM
129	"	"	"		1	Debitage	MGM
130	"	"	"		3	Flakes	MGM
131	S-65	B	50°/747 Feet		1	Mano Fragment, Biface, Polished	Granite
132	"	"	"		3	Debitage	MGM
133	"	"	"		3	Flakes	MGM
134	S-66	B	44°/646 Feet		1	Retouched Flake	MGM
135	"	"	"		1	Flake	MGM
136	S-67	B	51°/817 Feet		1	Debitage	MGM
137	"	"	"		1	Flake	MGM
138	S-68	B	48°/803 Feet		1	Retouched Debitage	FGM
139	"	"	"		1	Retouched Flake	FGM
140	"	"	"		1	Debitage	FGM
141	"	"	"		1	Debitage	MGM
142	"	"	"		1	Retouched Flake	MGM
143	"	"	"		3	Flakes	MGM
144	S-69	B	52°/878 Feet		1	Debitage	MGM
145	S-70	B	51°/830 Feet		1	Flake	FGM
146	"	"	"		1	Core Fragment	MGM
147	"	"	"		1	Debitage	MGM
148	"	"	"		2	Flakes	MGM
149	S-71	B	53°/894 Feet		2	Debitage	MGM
150	"	"	"		1	Flake	MGM
151	S-72	B	49°/865 Feet		1	Retouched Flake	MGM
152	"	"	"		1	Flake	MGM
153	S-73	B	51°/861 Feet		1	Retouched Debitage	FGM
154	"	"	"		1	Debitage	FGM
155	"	"	"		1	Flake	MGM
156	S-74	B	310°/53 Feet		1	Flake	MGM
157	S-75	B	358°/60 Feet		1	Debitage	FGM
158	S-76	B	318°/59 Feet		1	Flake	MGM
159	S-77	B	16°/81 Feet		1	Core	MGM
160	S-78	B	341°/77 Feet		1	Flake	Chert
161	"	"	"		1	Debitage	FGM
162	"	"	"		1	Utilized Debitage	MGM
163	"	"	"		3	Debitage	MGM
164	S-79	B	11°/96 Feet		2	Debitage	MGM
165	"	"	"		1	Flake	MGM
166	S-80	B	350°/83 Feet		4	Debitage	MGM
167	S-81	B	17°/104 Feet		1	Debitage	MGM
168	S-82	B	0°/92 Feet		2	Flakes	FGM
169	"	"	"		2	Debitage	MGM
170	"	"	"		3	Flakes	MGM

Cat. No.	Provenience	Datum	Location from Datum Azimuth/Range	Depth	Qty/ Weight	Recovery	Material
171	S-83	B	17°/113 Feet		1 Flake		MGM
172	S-84	B	5°/99 Feet		1 Flake		FGM
173	"	"	"		2 Debitage		MGM
174	"	"	"		2 Flakes		MGM
175	S-85	B	20°/119 Feet		1 Debitage		MGM
176	S-86	B	10°/115 Feet		1 Hammer/Core, Spherical		MGM
177	"	"	"		1 Debitage		MGM
178	"	"	"		3 Flakes		MGM
179	S-87	B	24°/122 Feet		1 Flake		MGM
180	S-88	B	327°/71 Feet		1 Mano Fragment, Biface		Granite
181	"	"	"		2 Debitage		FGM
182	"	"	"		2 Flakes		FGM
183	"	"	"		1 Debitage		MGM
184	"	"	"		4 Flakes		MGM
185	S-89	B	31°/131 Feet		1 Flake		MGM
186	S-90	B	13°/123 Feet		2 Debitage		MGM
187	S-91	B	26°/158 Feet		1 Domed Scraper		MGM
188	"	"	"		1 Flake		MGM
189	S-92	B	15°/138 Feet		1 Flake		FGM
190	"	"	"		2 Debitage		MGM
191	"	"	"		3 Flakes		MGM
192	S-93	B	23°/155 Feet		1 Debitage		FGM
193	S-94	B	17°/156 Feet		1 Flake		FGM
194	"	"	"		1 Debitage		MGM
195	"	"	"		1 Flake		MGM
196	S-95	B	27°/170 Feet		1 Hammerstone Fragment		MGM
197	"	"	"		Undetermined		
197	"	"	"		1 Retouched Flake		MGM
198	"	"	"		1 Debitage		MGM
199	"	"	"		2 Flakes		MGM
200	S-96	B	23°/168 Feet		1 Core		MGM
201	"	"	"		1 Debitage		MGM
202	"	"	"		6 Flakes		MGM
203	S-97	B	31°/230 Feet		1 Debitage		FGM
204	"	"	"		2 Flakes		MGM
205	S-98	B	28°/221 Feet		2 Debitage		MGM
206	S-99	B	33°/258 Feet		1 Debitage		MGM
207	S-100	B	35°/275 Feet		2 Debitage		MGM
208	S-101	B	40°/477 Feet		1 Debitage		MGM
209	S-102	B	45°/563 Feet		1 Retouched Debitage		MGM
210	"	"	"		1 Flake		MGM
211	S-103	B	45°/563 Feet		1 Retouched Flake		FGM
212	"	"	"		1 Hammerstone, Single-Edged		MGM
213	S-104	B	44°/583 Feet		1 Debitage		FGM
214	"	"	"		1 Flake		MGM
215	S-105	B	39°/355 Feet		1 Debitage		MGM

Cat. No.	Provenience	Datum	Location from Datum Azimuth/Range	Depth	Qty/ Weight	Recovery	Material
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216	S-106	B	46°/629 Feet		1 Flake		MGM
217	S-107	B	41°/383 Feet		1 Debitage		MGM
218	S-108	B	46°/622 Feet		1 Utilized Flake		FGM
219	"	"	"		2 Debitage		MGM
220	S-109	B	41°/437 Feet		1 Core Fragment		MGM
221	"	"	"		1 Debitage		MGM
222	"	"	"		1 Flake		MGM
223	S-110	B	46°/655 Feet		1 Flake		FGM
224	"	"	"		2 Debitage		MGM
225	"	"	"		1 Flake		MGM
226	S-111	B	43°/465 Feet		2 Debitage		MGM
227	"	"	"		1 Flake		MGM
228	S-112	B	47°/720 Feet		1 Hammerstone, Circular		MGM
229	"	"	"		1 Debitage		MGM
230	"	"	"		2 Flakes		MGM
231	S-113	B	44°/514 Feet		1 Debitage		MGM
232	"	"	"		3 Flakes		MGM
233	S-114	B	47°/762 Feet		1 Flake		FGM
234	"	"	"		1 Retouched Debitage		MGM
235	"	"	"		1 Core Fragment		MGM
236	"	"	"		3 Flakes		MGM
237	S-115	B	43°/496 Feet		1 Core		FGM
238	S-116	B	47°/751 Feet		1 Retouched Flake		FGM
239	"	"	"		2 Flakes		FGM
240	"	"	"		2 Flakes		MGM
241	S-117	B	272°/157 Feet		1 Retouched Flake		FGM
242	"	"	"		1 Debitage		MGM
243	S-118	B	271°/183 Feet		1 Debitage		MGM
244	S-119	B	266°/176 Feet		1 Flake		FGM
245	S-120	B	266°/229 Feet		1 Flake		MGM
246	S-121	B	259°/257 Feet		3 Debitage		MGM
247	"	"	"		4 Flakes		MGM
248	S-122	B	263°/274 Feet		2 Flakes		FGM
249	"	"	"		1 Flake		MGM
250	S-123	B	262°/288 Feet		1 Retouched Flake		FGM
251	"	"	"		4 Flakes		FGM
252	"	"	"		6 Debitage		MGM
253	"	"	"		2 Flakes		MGM
254	S-124	B	257°/290 Feet		1 Debitage		MGM
255	"	"	"		1 Flake		MGM
256	S-125	B	259°/307 Feet		1 Flake		MGM
257	S-126	B	259°/338 Feet		1 Debitage		FGM
258	"	"	"		4 Flakes		FGM
259	"	"	"		1 Hammerstone, Circular		MGM
260	"	"	"		1 Utilized Flake		MGM
261	"	"	"		1 Tested Cobble		MGM

Cat. No.	Provenience	Datum	Location from Datum Azimuth/Range	Depth	Qty/ Weight	Recovery	Material
262	S-126	B	259°/338 Feet		2	Flakes	MGM
263	S-127	B	259°/317 Feet		1	Retouched Flake	FGM
264	"	"	"		1	Hammerstone, Circular	MGM
265	"	"	"		1	Chopper	MGM
266	"	"	"		2	Flakes	MGM
267	S-128	B	257°/322 Feet		1	Debitage	FGM
268	"	"	"		1	Flake	MGM
269	S-129	B	261°/352 Feet		1	Debitage	MGM
270	"	"	"		1	Flake	MGM
271	S-130	B	261°/373 Feet		1	Core	Granite
272	S-131	B	259°/389 Feet		1	Retouched Flake	FGM
273	"	"	"		1	Utilized Flake	FGM
274	"	"	"		3	Flakes	FGM
275	"	"	"		4	Debitage	MGM
276	"	"	"		1	Flake	MGM
277	S-132	B	258°/409 Feet		1	Hammerstone Fragment, Undetermined	MGM
278	"	"	"		1	Flake Scraper	MGM
279	"	"	"		1	Utilized Flake	MGM
280	"	"	"		3	Debitage	MGM
281	S-133	B	256°/399 Feet		1	Hammerstone, Single-Edged	FGM
282	"	"	"		1	Retouched Flake	MGM
283	"	"	"		1	Flake	MGM
284	S-134	B	258°/433 Feet		1	Potsherd	TBW***
285	"	"	"		2	Flakes	FGM
286	"	"	"		1	Hammerstone, Circular	MGM
287	"	"	"		1	Retouched Flake	MGM
288	"	"	"		1	Debitage	MGM
289	S-135	B	258°/456 Feet		1	Flake	Chalcedony
290	"	"	"		1	Core Fragment	FGM
291	"	"	"		1	Debitage	FGM
292	"	"	"		3	Flakes	FGM
293	"	"	"		1	Core	MGM
294	"	"	"		2	Debitage	MGM
295	"	"	"		1	Flake	Quartz
296	S-136	B	258°/496 Feet		3	Potsherds	TBW
297	"	"	"		1	Debitage	FGM
298	"	"	"		2	Flakes	FGM
299	"	"	"		1	Debitage	MGM
300	"	"	"		1	Flake	MGM
301	"	"	"		1	Mano Fragment, Undetermined	Quartzite
302	S-137	B	257°/516 Feet		2	Flakes	FGM
303	"	"	"		1	Debitage	MGM

***TBW=Tizon Brown Ware

Cat. No.	Provenience	Datum	Location from Datum Azimuth/Range	Depth	Qty/ Weight	Recovery	Material
304	S-137	B	257°/516 Feet		3	Flakes	MGM
305	S-138	B	257°/532 Feet		2	Potsherds	TBW
306	"	"	"		1	Utilized Flake	FGM
307	"	"	"		2	Debitage	FGM
308	"	"	"		8	Flakes	FGM
309	"	"	"		1	Debitage	MGM
310	"	"	"		2	Flakes	MGM
311	S-139	B	257°/552 Feet		1	Debitage	MGM
312	"	"	"		1	Flake	MGM
313	S-140	B	256°/559 Feet		1	Utilized Debitage	FGM
314	"	"	"		1	Flake	MGM
315	S-141	B	257°/573 Feet		1	Debitage	FGM
316	"	"	"		2	Debitage	MGM
317	"	"	"		0.2 g.	Marine Shell	Unidentifiable
318	S-142	B	257°/606 Feet		1	Flake	Granite
319	"	"	"		2	Debitage	FGM
320	"	"	"		1	Flake	FGM
321	"	"	"		2	Cores	MGM
322	"	"	"		3	Flakes	MGM
323	S-143	B	256°/623 Feet		1	Flake	FGM
324	"	"	"		2	Debitage	MGM
325	"	"	"		5	Flakes	MGM
326	S-144	B	257°/631 Feet		1	Mano, Biface	Granite
327	"	"	"		1	Core	FGM
328	"	"	"		1	Hammerstone, Circular	MGM
329	"	"	"		1	Retouched Debitage Fragment	MGM
330	"	"	"		1	Core	MGM
331	"	"	"		1	Tested Cobble	MGM
332	S-145	B	256°/683 Feet		1	Hammerstone, Circular	MGM
333	"	"	"		1	Core Fragment	MGM
334	"	"	"		2	Flakes	MGM
335	S-146	B	256°/646 Feet		1	Core	FGM
336	"	"	"		3	Debitage	FGM
337	"	"	"		2	Flakes	FGM
338	"	"	"		7	Debitage	MGM
339	"	"	"		5	Flakes	MGM
340	S-147	C	66°/114 Feet		2	Debitage	MGM
341	"	"	"		2	Flakes	MGM
342	S-148	C	77°/128 Feet		1	Hammerstone, Single-Edged	MGM
343	"	"	"		1	Flake	MGM
344	S-149	C	88°/94 Feet		1	Core	FGM
345	"	"	"		2	Debitage	MGM
346	S-150	C	67°/94 Feet		1	Core	FGM
347	"	"	"		1	Flake	FGM
348	"	"	"		1	Hammerstone, Circular	MGM
349	"	"	"		1	Core	MGM

Cat. No.	Provenience	Datum	Location from Datum Azimuth/Range	Depth	Qty/ Weight	Recovery	Material
350	S-150	C	67°/94 Feet		2	Debitage	MGM
351	"	"	"		3	Flakes	MGM
352	S-151	C	93°/73 Feet		1	Core	FGM
353	"	"	"		1	Core	MGM
354	"	"	"		2	Flakes	MGM
355	S-152	C	64°/62 Feet		1	Core	FGM
356	"	"	"		1	Core	MGM
357	"	"	"		1	Flake	MGM
358	"	"	"		1	Hammerstone, Spherical	Quartzite
359	S-153	C	57°/44 Feet		1	Flake	FGM
360	"	"	"		1	Retouched Debitage	MGM
361	"	"	"		2	Cores	MGM
362	"	"	"		3	Debitage	MGM
363	"	"	"		4	Flakes	MGM
364	"	"	"		1	Hammerstone, Spherical	MGM
365	"	"	"		1	Mano Fragment, Biface, Polished, Pecked	Quartzite
366	S-154	C	115°/24 Feet		1	Flake	FGM
367	"	"	"		4	Debitage	MGM
368	"	"	"		1	Retouched Flake	MGM
369	S-155	C	99°/26 Feet		2	Debitage	MGM
370	"	"	"		1	Flake	MGM
371	S-156	C	76°/9 Feet		1	Debitage	MGM
372	S-157	C	166°/20 Feet		1	Flake	MGM
373	S-158	C	301°/48 Feet		2	Debitage	MGM
374	S-159	D	19°/88 Feet		1	Flake	MGM
375	S-160	D	34°/95 Feet		1	Debitage	MGM
376	"	"	"		1	Flake	MGM
377	"	"	"		1	Debitage	FGM
378	S-161	D	27°/92 Feet		1	Hammerstone Fragment, Undetermined	MGM
379	S-162	D	46°/133 Feet		1	Retouched Debitage	MGM
380	S-163	D	67°/672 Feet		1	Flake	MGM
381	S-164	D	53°/177 Feet		4	Debitage	MGM
382	"	"	"		1	Flake	MGM
383	S-165	D	64°/676 Feet		1	Core	MGM
384	S-166	D	58°/245 Feet		2	Debitage	MGM
385	S-167	D	63°/602 Feet		1	Debitage	MGM
386	S-168	D	59°/280 Feet		1	Retouched Flake	MGM
387	"	"	"		1	Flake	MGM
388	S-169	D	63°/579 Feet		1	Debitage	MGM
389	S-170	D	53°/306 Feet		1	Hammer/Core, Single-Edged	FGM
390	"	"	"		1	Flake	MGM
391	S-171	D	63°/564 Feet		1	Retouched Flake	MGM
392	"	"	"		2	Flakes	MGM
393	S-172	D	281°/124 Feet		1	Core	MGM

Cat. No.	Prov- enience	Datum	Location from Datum Azimuth/Range	Depth	Qty/ Weight	Recovery	Material
394	S-172	D	281°/124 Feet		1 Flake		FGM
395	S-173	D	63°/506 Feet		1 Core		MGM
396	S-174	D	269°/162 Feet		1 Hammerstone, Single-Edged		FGM
397	"	"	"		2 Flakes		MGM
398	S-175	D	59°/472 Feet		1 Core Fragment		FGM
399	"	"	"		1 Debitage		MGM
400	S-176	D	256°/280 Feet		1 Retouched Debitage		MGM
401	S-177	D	57°/324 Feet		1 Flake		MGM
402	S-178	D	254°/332 Feet		1 Retouched Debitage		MGM
403	"	"	"		1 Core		MGM
404	S-179	D	47°/229 Feet		1 Flake		MGM
405	S-180	D	258°/351 Feet		2 Debitage		MGM
406	S-181	D	47°/211 Feet		1 Debitage		MGM
407	S-182	D	256°/341 Feet		2 Debitage		MGM
408	S-183	D	283°/54 Feet		1 Hammerstone Fragment, Undetermined		FGM
409	"	"	"		1 Hammerstone, Spherical		MGM
410	"	"	"		1 Debitage		MGM
411	S-184	D	257°/397 Feet		2 Debitage		MGM
412	S-185	D	253°/413 Feet		1 Core		FGM
413	"	"	"		1 Core		MGM
414	S-186	D	254°/507 Feet		1 Core		MGM
415	S-187	D	251°/445 Feet		1 Debitage		MGM
416	"	"	"		1 Hammer/Core		MGM
417	S-188	D	254°/528 Feet		1 Debitage		MGM
418	S-189	D	252°/507 Feet		1 Flake		MGM
419	S-190	D	249°/649 Feet		1 Debitage		MGM
420	S-191	D	252°/522 Feet		1 Flake		FGM
421	"	"	"		2 Flakes		MGM
422	S-192	D	245°/813 Feet		2 Flakes		MGM
423	S-193	D	247°/680 Feet		1 Core		MGM
424	"	"	"		1 Flake		MGM
425	S-194	D	240°/1016 Feet		1 Core		FGM
426	S-195	D	246°/725 Feet		1 Flake		FGM
427	"	"	"		1 Debitage		MGM
428	S-196	D	255°/461 Feet		1 Retouched Flake		MGM
429	S-197	D	243°/940 Feet		1 Retouched Flake		FGM
430	"	"	"		1 Debitage		FGM
431	S-198	D	239°/1128 Feet		1 Flake		Quartzite
432	S-199	D	242°/848 Feet		1 Flake		MGM
433	S-200	F	54°/349 Feet		1 Core		FGM
434	S-201	F	48°/325 Feet		1 Core		FGM
435	"	"	"		1 Flake		FGM
436	S-202	G	133°/36 Feet		1 Debitage		MGM
437	"	"	"		1 Flake		MGM

Cat. No.	Provenience	Datum	Location from Datum Azimuth/Range	Depth	Qty/ Weight	Recovery	Material
438	S-203	F	47°/316 Feet		1	Metate Fragment, Biface, Polished, Pecked	Granite
439	S-204	F	45°/338 Feet		4	Flakes	FGM
440	"	"	"		1	Hammerstone, Single-Edged	MGM
441	"	"	"		1	Debitage	MGM
442	"	"	"		5	Flakes	MGM
443	S-205	F	48°/287 Feet		1	Retouched Flake Fragment	FGM
444	"	"	"		1	Hammerstone, Spherical	FGM
445	"	"	"		1	Debitage	FGM
446	S-206	F	44°/314 Feet		1	Core	FGM
447	"	"	"		3	Flakes	FGM
448	"	"	"		1	Utilized Flake	MGM
449	"	"	"		2	Debitage	MGM
450	"	"	"		8	Flakes	MGM
451	S-207	F	8°/126 Feet		1	Core	FGM
452	"	"	"		1	Core	MGM
453	S-208	G	112°/68 Feet		1	Debitage	MGM
454	S-209	F	358°/119 Feet		1	Flake	FGM
455	"	"	"		1	Debitage	MGM
456	"	"	"		2	Flakes	MGM
457	S-210	F	274°/240 Feet		1	Flake	MGM
458	S-211	F	311°/118 Feet		1	Debitage	FGM
459	"	"	"		1	Flake	MGM
460	S-212	G	262°/344 Feet		1	Hammerstone, Circular	FGM
461	"	"	"		1	Flake	MGM
462	S-213	H	167°/67 Feet		1	Core Fragment	MGM
463	"	"	"		1	Flake	MGM
464	S-214	G	260°/360 Feet		1	Core	FGM
465	S-215	G	84°/84 Feet		1	Metate Fragment, Uniface	Granite
466	S-216	G	262°/245 Feet		1	Flake	FGM
467	S-217	G	75°/32 Feet		1	Debitage	FGM
468	"	"	"		1	Flake	MGM
469	"	"	"		1	Hammer/Core Fragment	MGM
470	S-218	H	164°/86 Feet		1	Debitage	MGM
471	S-219	G	259°/100 Feet		1	Core	MGM
472	S-220	H	266°/272 Feet		1	Hammer/Core	MGM
473	S-221	G	262°/386 Feet		1	Core	MGM
474	"	"	"		1	Flake	MGM
475	S-222	H	271°/212 Feet		1	Retouched Flake	MGM
476	S-223	G	262°/487 Feet		1	Flake	FGM
477	"	"	"		2	Flakes	MGM
478	S-224	H	119°/51 Feet		1	Core	MGM
479	S-225	G	140°/42 Feet		1	Retouched Flake	FGM
480	"	"	"		1	Core	MGM
481	"	"	"		3	Debitage	MGM
482	S-226	E	297°/179 Feet		1	Debitage	FGM

Cat. No.	Prov- enience	Datum	Location from Datum Azimuth/Range	Depth	Qty/ Weight	Recovery	Material
483	S-226	E	297°/179 Feet		1	Retouched Flake	MGM
484	"	"	"		1	Flake	MGM
485	ST-1	B	33°/283 Feet	0-10 cm.	2	Flakes	FGM
486	"	"	"	10-20 cm.		No Recovery	
487	"	"	"	20-30 cm.		No Recovery	
488	ST-2	B	28°/189 Feet	0-10 cm.		No Recovery	
489	"	"	"	10-20 cm.	1	Flake	MGM
490	"	"	"	20-30 cm.		No Recovery	
491	ST-3	B	299°/89 Feet	0-10 cm.		No Recovery	
492	"	"	"	10-20 cm.		No Recovery	
493	"	"	"	20-30 cm.		No Recovery	
494	ST-4	B	359°/97 Feet	0-10 cm.	1	Flake	FGM
495	"	"	"	"	1	Debitage	MGM
496	"	"	"	"	2	Flakes	MGM
497	"	"	"	10-20 cm.	1	Flake	FGM
498	"	"	"	"	1	Debitage	MGM
499	"	"	"	"	5	Flakes	MGM
500	"	"	"	20-30 cm.		No Recovery	
501	"	"	"	30-40 cm.		No Recovery	
502	ST-5	B	42°/428 Feet	0-10 cm.		No Recovery	
503	"	"	"	10-20 cm.		No Recovery	
504	"	"	"	20-30 cm.		No Recovery	
505	ST-6	B	303°/67 Feet	0-10 cm.		No Recovery	
506	"	"	"	10-20 cm.		No Recovery	
507	"	"	"	20-30 cm.		No Recovery	
508	ST-7	B	43°/497 Feet	0-10 cm.		No Recovery	
509	"	"	"	10-20 cm.		No Recovery	
510	"	"	"	20-30 cm.		No Recovery	
511	ST-8	B	268°/138 Feet	0-10 cm.		No Recovery	
512	"	"	"	10-20 cm.		No Recovery	
513	"	"	"	20-30 cm.		No Recovery	
514	ST-9	B	44°/562 Feet	0-10 cm.		No Recovery	
515	"	"	"	10-20 cm.		No Recovery	
516	"	"	"	20-30 cm.		No Recovery	
517	ST-10	B	268°/239 Feet	0-10 cm.		No Recovery	
518	"	"	"	10-20 cm.		No Recovery	
519	"	"	"	20-30 cm.		No Recovery	
520	ST-11	B	46°/623 Feet	0-10 cm.		No Recovery	
521	"	"	"	10-20 cm.		No Recovery	
522	"	"	"	20-30 cm.		No Recovery	
523	ST-12	B	261°/310 Feet	0-10 cm.		No Recovery	
524	"	"	"	10-20 cm.		No Recovery	
525	"	"	"	20-30 cm.		No Recovery	
526	ST-13	B	48°/689 Feet	0-10 cm.		No Recovery	
527	"	"	"	10-20 cm.		No Recovery	
528	"	"	"	20-30 cm.		No Recovery	

Cat. No.	Province	Datum	Location from Datum Azimuth/Range	Depth	Qty/ Weight	Recovery	Material
529	ST-14	B	259°/385 Feet	0-10 cm.	1 Flake		MGM
530	"	"	"	10-20 cm.	No Recovery		
531	"	"	"	20-30 cm.	No Recovery		
532	ST-15	B	50°/761 Feet	0-10 cm.	No Recovery		
533	"	"	"	10-20 cm.	No Recovery		
534	"	"	"	20-30 cm.	No Recovery		
535	ST-16	B	256°/517 Feet	0-10 cm.	No Recovery		
536	"	"	"	10-20 cm.	1 Flake		FGM
537	"	"	"	20-30 cm.	1 Debitage		MGM
538	"	"	"	30-40 cm.	No Recovery		
539	ST-17	B	51°/826 Feet	0-10 cm.	No Recovery		
540	"	"	"	10-20 cm.	No Recovery		
541	"	"	"	20-30 cm.	No Recovery		
542	ST-18	B	257°/583 Feet	0-10 cm.	No Recovery		
543	"	"	"	10-20 cm.	No Recovery		
544	"	"	"	20-30 cm.	No Recovery		
545	ST-19	C	298°/57 Feet	0-10 cm.	No Recovery		
546	"	"	"	10-20 cm.	No Recovery		
547	"	"	"	20-30 cm.	No Recovery		
548	ST-20	B	256°/617 Feet	0-10 cm.	No Recovery		
549	"	"	"	10-20 cm.	No Recovery		
550	"	"	"	20-30 cm.	No Recovery		
551	ST-21	C	271°/110 Feet	0-10 cm.	No Recovery		
552	"	"	"	10-20 cm.	No Recovery		
553	"	"	"	20-30 cm.	No Recovery		
554	ST-22	B	255°/670 Feet	0-10 cm.	No Recovery		
555	"	"	"	10-20 cm.	No Recovery		
556	"	"	"	20-30 cm.	No Recovery		
557	ST-23	C	264°/177 Feet	0-10 cm.	1 Debitage		MGM
558	"	"	"	10-20 cm.	No Recovery		
559	"	"	"	20-30 cm.	No Recovery		
560	ST-24	C	261°/372 Feet	0-10 cm.	1 Flake		MGM
561	"	"	"	10-20 cm.	No Recovery		
562	"	"	"	20-30 cm.	No Recovery		
563	ST-25	G	262°/713 Feet	0-10 cm.	No Recovery		
564	"	"	"	10-20 cm.	No Recovery		
565	"	"	"	20-30 cm.	No Recovery		
566	ST-26	C	262°/625 Feet	0-10 cm.	No Recovery		
567	"	"	"	10-20 cm.	No Recovery		
568	"	"	"	20-30 cm.	No Recovery		
569	ST-27	G	263°/464 Feet	0-10 cm.	No Recovery		
570	"	"	"	10-20 cm.	No Recovery		
571	"	"	"	20-30 cm.	No Recovery		
572	ST-28	D	33°/128 Feet	0-10 cm.	No Recovery		
573	"	"	"	10-20 cm.	No Recovery		
574	"	"	"	20-30 cm.	No Recovery		

Cat. No.	Prov- enience	Datum	Location from Datum Azimuth/Range	Depth	Qty/ Weight	Recovery	Material
575	ST-29	G	268°/240 Feet	0-10 cm.		No Recovery	
576	"	"	"	10-20 cm.		No Recovery	
577	"	"	"	20-30 cm.		No Recovery	
578	ST-30	D	260°/253 Feet	0-10 cm.	1 Flake		MGM
579	"	"	"	10-20 cm.		No Recovery	
580	"	"	"	20-30 cm.		No Recovery	
581	ST-31	G	255°/95 Feet	0-10 cm.		No Recovery	
582	"	"	"	10-20 cm.		No Recovery	
583	"	"	"	20-30 cm.		No Recovery	
584	ST-32	E	228°/502 Feet	0-10 cm.		No Recovery	
585	"	"	"	10-20 cm.		No Recovery	
586	"	"	"	20-30 cm.		No Recovery	
587	ST-33	F	274°/250 Feet	0-10 cm.		No Recovery	
588	"	"	"	10-20 cm.		No Recovery	
589	"	"	"	20-30 cm.		No Recovery	
590	ST-34	D	252°/570 Feet	0-10 cm.	1 Flake		FGM
591	"	"	"	10-20 cm.		No Recovery	
592	"	"	"	20-30 cm.		No Recovery	
593	ST-35	F	36°/183 Feet	0-10 cm.		No Recovery	
594	"	"	"	10-20 cm.		No Recovery	
595	"	"	"	20-30 cm.		No Recovery	
596	ST-36	D	242°/855 Feet	0-10 cm.		No Recovery	
597	"	"	"	10-20 cm.		No Recovery	
598	"	"	"	20-30 cm.		No Recovery	
599	ST-37	E	103°/45 Feet	0-10 cm.		No Recovery	
600	"	"	"	10-20 cm.		No Recovery	
601	"	"	"	20-30 cm.		No Recovery	
602	ST-38	D	238°/1077 Feet	0-10 cm.		No Recovery	
603	"	"	"	10-20 cm.		No Recovery	
604	"	"	"	20-30 cm.		No Recovery	
605	ST-39	D	235°/1280 Feet	0-10 cm.		No Recovery	
606	"	"	"	10-20 cm.		No Recovery	
607	"	"	"	20-30 cm.		No Recovery	
608	ST-40	D	236°/1178 Feet	0-10 cm.		No Recovery	
609	"	"	"	10-20 cm.		No Recovery	
610	"	"	"	20-30 cm.		No Recovery	
611	ST-41	B	33°/279 Feet	0-10 cm.		No Recovery	
612	"	"	"	10-20 cm.		No Recovery	
613	"	"	"	20-30 cm.		No Recovery	
614	ST-42	B	33°/293 Feet	0-10 cm.		No Recovery	
615	"	"	"	10-20 cm.		No Recovery	
616	"	"	"	20-30 cm.		No Recovery	
617	ST-43	B	256°/519 Feet	0-10 cm.		No Recovery	
618	"	"	"	10-20 cm.		No Recovery	
619	"	"	"	20-30 cm.		No Recovery	
620	ST-44	B	258°/521 Feet	0-10 cm.		No Recovery	

Cat. No.	Provenience	Datum	Location from Datum Azimuth/Range	Depth	Qty/ Weight	Recovery	Material
621	ST-44	B	258°/521 Feet	10-20 cm.		No Recovery	
622	"	"	"	20-30 cm.		No Recovery	
623	TU-1	A	359°/97 Feet	0-10 cm.	4	Flakes	FGM
624	"	"	"	"	9	Debitage	MGM
625	"	"	"	"	20	Flakes	MGM
626	"	"	"	10-20 cm.	1	Debitage	FGM
627	"	"	"	"	4	Flakes	FGM
628	"	"	"	"	1	Hammer/Core, Circular	MGM
629	"	"	"	"	4	Debitage	MGM
630	"	"	"	"	19	Flakes	MGM
631	"	"	"	20-30 cm.	2	Debitage	FGM
632	"	"	"	"	1	Hammer/Core, Single-Edged	MGM
633	"	"	"	"	9	Debitage	MGM
634	"	"	"	"	5	Flakes	MGM
635	"	"	"	30-40 cm.		No Recovery	
636	A	TU-2	258°/525 Feet	0-10 cm.	1	Debitage	FGM
637	"	"	"	"	6	Flakes	FGM
638	"	"	"	10-20 cm.	8	Flakes	FGM
639	"	"	"	"	1	Debitage	MGM
640	"	"	"	"	1	Flake	MGM
641	"	"	"	20-30 cm.		No Recovery	

APPENDIX II

TABLE 5.11-2
Surface Recovery Data — SDI-12,809

TABLE 5.11-2Surface Recovery Data
Site SDI-12,809

Recovery Location	Datum	Location from Datum Azimuth/Range	Quantity/ Weight	Recovery	Material	Cat. No.
1	B	270°/237 Feet	2 Debitage		MGM*	1
			1 Flake		MGM	2
2	B	307°/83 Feet	1 Core Fragment		FGM**	3
			1 Debitage		FGM	4
			2 Debitage		MGM	5
			3 Flakes		MGM	6
3	B	271°/181 Feet	1 Debitage		Granite	7
			1 Debitage		FGM	8
			1 Flake		FGM	9
			2 Debitage		MGM	10
			1 Flake		Quartzite	11
4	B	303°/71 Feet	1 Flake		FGM	12
			1 Hammerstone, Circular		MGM	13
			1 Debitage		MGM	14
5	B	1°/115 Feet	1 Utilized Flake		FGM	15
			1 Hammerstone, Spherical		MGM	16
			1 Hammerstone Fragment, Undetermined		MGM	17
			1 Flake		MGM	18
6	B	4°/77 Feet	1 Flake		FGM	19
			1 Flake		MGM	20
7	B	345°/82 Feet	3 Flakes		FGM	21
			2 Debitage		MGM	22
			3 Flakes		MGM	23
8	B	14°/90 Feet	1 Debitage		MGM	24
			1 Flake		MGM	25
9	B	19°/88 Feet	1 Hammer/Core, Circular		MGM	26
			1 Flake		MGM	27

*MGM=Medium-Grained Metavolcanic

**FGM=Fine-Grained Metavolcanic

Recovery Location	Datum	Location from Datum Azimuth/Range	Quantity/ Weight	Recovery	Material	Cat. No.
10	B	23°/139 Feet	1 Core		FGM	28
			1 Debitage		MGM	29
			2 Flakes		MGM	30
11	B	25°/161 Feet	1 Retouched Flake		FGM	31
12	B	32°/176 Feet	1 Flake Scraper		FGM	32
			1 Core		MGM	33
			1 Flake		MGM	34
13	B	33°/216 Feet	1 Core		FGM	35
			1 Flake Scraper		MGM	36
			1 Debitage		MGM	37
14	B	43°/463 Feet	1 Flake		MGM	38
15	B	43°/550 Feet	1 Retouched Flake Fragment		FGM	39
			2 Flakes		MGM	40
16	B	46°/618 Feet	1 Core		MGM	41
17	B	49°/705 Feet	1 Flake		MGM	42
18	B	48°/737 Feet	1 Flake		FGM	43
			2 Flakes		MGM	44
19	B	48°/753 Feet	1 Utilized Flake		FGM	45
			1 Retouched Debitage		MGM	46
			1 Retouched Flake		MGM	47
			1 Retouched Flake Fragment		MGM	48
			1 Debitage		MGM	49
			3 Flakes		MGM	50
20	B	49°/760 Feet	1 Flake		MGM	51
21	B	48°/496 Feet	1 Hammer/Core, Single-Edged		Quartzite	52
22	B	267°/88 Feet	1 Core Fragment		FGM	53
23	B	260°/365 Feet	1 Flake		FGM	54
			2 Flakes		MGM	55
24	B	259°/377 Feet	1 Flake		FGM	56
			1 Flake		MGM	57
25	B	257°/389 Feet	1 Debitage		FGM	58

Recovery Location	Datum	Location from Datum Azimuth/Range	Quantity/ Weight	Recovery	Material	Cat. No.
26	B	259°/434 Feet	1	Core	MGM	59
27	B	257°/473 Feet	1	Flake	MGM	60
28	B	257°/493 Feet	1	Flake	Quartzite	61
29	B	258°/515 Feet	2	Flakes	FGM	62
			1	Hammerstone, Spherical	MGM	63
			1	Flake	Quartzite	64
30	B	256°/529 Feet	1	Debitage	MGM	65
31	B	256°/624 Feet	1	Utilized Flake	MGM	66
			1	Core	MGM	67
			1	Debitage	MGM	68
			1	Flake	MGM	69
32	B	256°/640 Feet	2	Flakes	FGM	70
			1	Hammerstone Fragment, Undetermined	MGM	71
			1	Hammer/Core Fragment	MGM	72
			1	Debitage	MGM	73
33	B	253°/634 Feet	1	Debitage	MGM	74
			1	Flake	MGM	75
34	B	253°/667 Feet	1	Debitage	MGM	76
35	B	256°/690 Feet	1	Flake	FGM	77
36	B	255°/818 Feet	1	Hammer/Core, Single-Edged	MGM	78
			1	Flake	MGM	79
37	C	245°/16 Feet	1	Hammerstone, Spherical	MGM	80
38	C	257°/743 Feet	1	Domed Scraper	FGM	81
39	D	274°/82 Feet	1	Core	MGM	82
40	D	277°/170 Feet	1	Flake	MGM	83
41	D	254°/373 Feet	1	Retouched Debitage Fragment	MGM	84
42	D	258°/362 Feet	1	Flake	FGM	85
			1	Debitage	MGM	86

Recovery Location	Datum	Location from Datum Azimuth/Range	Quantity/ Weight	Recovery	Material	Cat. No.
43	D	258°/430 Feet	1	Core	MGM	87
44	D	257°/451 Feet	1	Flake	MGM	88
45	D	253°/557 Feet	1	Debitage	MGM	89
46	D	252°/562 Feet	1	Debitage	FGM	90
			1	Debitage	MGM	91
			2	Flakes	MGM	92
47	D	252°/579 Feet	1	Retouched Flake	MGM	93
48	D	250°/672 Feet	1	Flake Scraper	FGM	94
			2	Debitage	MGM	95
		22.5 g.		Marine Shell	<i>Laevicardium</i> sp.	96
49	D	249°/683 Feet	1	Hammer/Core, Single-Edged	MGM	97
50	D	249°/726 Feet	1	Hammerstone Fragment, Undetermined	FGM	98
51	D	248°/740 Feet	1	Hammerstone Fragment Undetermined	MGM	99
			1	Flake	MGM	100
52	D	248°/738 Feet	1	Mano, Uniface, Polished, Pecked	Granite	101
53	D	248°/807 Feet	1	Flake	MGM	102
54	D	247°/818 Feet	1	Flake	FGM	103
55	D	245°/845 Feet	1	Core	MGM	104
56	D	238°/1055 Feet	1	Debitage	FGM	105
			1	Hammer/Core, Single-Edged	MGM	106
57	D	234°/1331 Feet	1	Core	MGM	107
58	G	262°/186 Feet	1	Flake	MGM	108
59	G	267°/435 Feet	1	Core Fragment	MGM	109
60	B	48°/765 Feet	1	Retouched Flake Fragment	FGM	110
			1	Debitage	FGM	111
			1	Flake	FGM	112

Recovery Location	Datum	Location from Datum Azimuth/Range	Quantity/ Weight	Recovery	Material	Cat. No.
60	B	48°/765 Feet	1	Retouched Flake	MGM	113
			1	Retouched Flake Fragment	MGM	114
			5	Debitage	MGM	115
			13	Flakes	MGM	116
61	B	48°/713 Feet	2	Flakes	FGM	117
			1	Debitage	MGM	118
			2	Flakes	MGM	119
62	B	48°/691 Feet	1	Debitage	FGM	120
			2	Flakes	FGM	121
			1	Retouched Flake	MGM	122
			1	Core	MGM	123
			2	Debitage	MGM	124
			2	Flakes	MGM	125
63	B	46°/683 Feet	1	Retouched Flake	FGM	126
			1	Flake	MGM	127
64	B	49°/746 Feet	1	Flake	FGM	128
			1	Debitage	MGM	129
			3	Flakes	MGM	130
65	B	50°/747 Feet	1	Mano Fragment, Biface, Polished	Granite	131
			3	Debitage	MGM	132
			3	Flakes	MGM	133
66	B	44°/646 Feet	1	Retouched Flake	MGM	134
			1	Flake	MGM	135
67	B	51°/817 Feet	1	Debitage	MGM	136
			1	Flake	MGM	137
68	B	48°/803 Feet	1	Retouched Debitage	FGM	138
			1	Retouched Flake	FGM	139
			1	Debitage	FGM	140
			1	Debitage	MGM	141
			1	Retouched Flake	MGM	142
			3	Flakes	MGM	143
69	B	52°/878 Feet	1	Debitage	MGM	144
70	B	51°/830 Feet	1	Flake	FGM	145
			1	Core Fragment	MGM	146
			1	Debitage	MGM	147

Recovery Location	Datum	Location from Datum Azimuth/Range	Quantity/ Weight	Recovery	Material	Cat. No.
70	B	51°/830 Feet	2 Flakes		MGM	148
71	B	53°/894 Feet	2 Debitage 1 Flake		MGM MGM	149 150
72	B	49°/865 Feet	1 Retouched Flake 1 Flake		MGM MGM	151 152
73	B	51°/861 Feet	1 Retouched Debitage 1 Debitage 1 Flake		FGM FGM MGM	153 154 155
74	B	310°/53 Feet	1 Flake		MGM	156
75	B	358°/60 Feet	1 Debitage		FGM	157
76	B	318°/59 Feet	1 Flake		MGM	158
77	B	16°/81 Feet	1 Core		MGM	159
78	B	341°/77 Feet	1 Flake 1 Debitage 1 Utilized Debitage 3 Debitage		Chert FGM MGM MGM	160 161 162 163
79	B	11°/96 Feet	2 Debitage 1 Flake		MGM MGM	164 165
80	B	350°/83 Feet	4 Debitage		MGM	166
81	B	17°/104 Feet	1 Debitage		MGM	167
82	B	0°/92 Feet	2 Flakes 2 Debitage 3 Flakes		FGM MGM MGM	168 169 170
83	B	17°/113 Feet	1 Flake		MGM	171
84	B	5°/99 Feet	1 Flake 2 Debitage 2 Flakes		FGM MGM MGM	172 173 174
85	B	20°/119 Feet	1 Debitage		MGM	175
86	B	10°/115 Feet	1 Hammer/Core, Spherical 1 Debitage		MGM MGM	176 177

Recovery Location	Datum	Location from Datum Azimuth/Range	Quantity/ Weight	Recovery	Material	Cat. No.
86	B	10°/115 Feet	3	Flakes	MGM	178
87	B	24°/122 Feet	1	Flake	MGM	179
88	B	327°/71 Feet	1	Mano Fragment, Biface	Granite	180
			2	Debitage	FGM	181
			2	Flakes	FGM	182
			1	Debitage	MGM	183
			4	Flakes	MGM	184
89	B	31°/131 Feet	1	Flake	MGM	185
90	B	13°/123 Feet	2	Debitage	MGM	186
91	B	26°/158 Feet	1	Domed Scraper	MGM	187
			1	Flake	MGM	188
92	B	15°/138 Feet	1	Flake	FGM	189
			2	Debitage	MGM	190
			3	Flakes	MGM	191
93	B	23°/155 Feet	1	Debitage	FGM	192
94	B	17°/156 Feet	1	Flake	FGM	193
			1	Debitage	MGM	194
			1	Flake	MGM	195
95	B	27°/170 Feet	1	Hammerstone Fragment	MGM	196
				Undetermined		
			1	Retouched Flake	MGM	197
			1	Debitage	MGM	198
			2	Flakes	MGM	199
96	B	23°/168 Feet	1	Core	MGM	200
			1	Debitage	MGM	201
			6	Flakes	MGM	202
97	B	31°/230 Feet	1	Debitage	FGM	203
			2	Flakes	MGM	204
98	B	28°/221 Feet	2	Debitage	MGM	205
99	B	33°/258 Feet	1	Debitage	MGM	206
100	B	35°/275 Feet	2	Debitage	MGM	207

Recovery Location	Datum	Location from Datum Azimuth/Range	Quantity/ Weight	Recovery	Material	Cat. No.
101	B	40°/477 Feet	1	Debitage	MGM	208
102	B	45°/563 Feet	1	Retouched Debitage	MGM	209
			1	Flake	MGM	210
103	B	45°/563 Feet	1	Retouched Flake	FGM	211
			1	Hammerstone, Single-Edged	MGM	212
104	B	44°/583 Feet	1	Debitage	FGM	213
			1	Flake	MGM	214
105	B	39°/355 Feet	1	Debitage	MGM	215
106	B	46°/629 Feet	1	Flake	MGM	216
107	B	41°/383 Feet	1	Debitage	MGM	217
108	B	46°/622 Feet	1	Utilized Flake	FGM	218
			2	Debitage	MGM	219
109	B	41°/437 Feet	1	Core Fragment	MGM	220
			1	Debitage	MGM	221
			1	Flake	MGM	222
110	B	46°/655 Feet	1	Flake	FGM	223
			2	Debitage	MGM	224
			1	Flake	MGM	225
111	B	43°/465 Feet	2	Debitage	MGM	226
			1	Flake	MGM	227
112	B	47°/720 Feet	1	Hammerstone, Circular	MGM	228
			1	Debitage	MGM	229
			2	Flakes	MGM	230
113	B	44°/514 Feet	1	Debitage	MGM	231
			3	Flakes	MGM	232
114	B	47°/762 Feet	1	Flake	FGM	233
			1	Retouched Debitage	MGM	234
			1	Core Fragment	MGM	235
			3	Flakes	MGM	236
115	B	43°/496 Feet	1	Core	FGM	237

Recovery Location	Datum	Location from Datum Azimuth/Range	Quantity/ Weight	Recovery	Material	Cat. No.
116	B	47°/751 Feet	1 Retouched Flake		FGM	238
			2 Flakes		FGM	239
			2 Flakes		MGM	240
117	B	272°/157 Feet	1 Retouched Flake		FGM	241
			1 Debitage		MGM	242
118	B	271°/183 Feet	1 Debitage		MGM	243
119	B	266°/176 Feet	1 Flake		FGM	244
120	B	266°/229 Feet	1 Flake		MGM	245
121	B	259°/257 Feet	3 Debitage		MGM	246
			4 Flakes		MGM	247
122	B	263°/274 Feet	2 Flakes		FGM	248
			1 Flake		MGM	249
123	B	262°/288 Feet	1 Retouched Flake		FGM	250
			4 Flakes		FGM	251
			6 Debitage		MGM	252
			2 Flakes		MGM	253
124	B	257°/290 Feet	1 Debitage		MGM	254
			1 Flake		MGM	255
125	B	259°/307 Feet	1 Flake		MGM	256
126	B	259°/338 Feet	1 Debitage		FGM	257
			4 Flakes		FGM	258
			1 Hammerstone, Circular		MGM	259
			1 Utilized Flake		MGM	260
			1 Tested Cobble		MGM	261
			2 Flakes		MGM	262
127	B	259°/317 Feet	1 Retouched Flake		FGM	263
			1 Hammerstone, Circular		MGM	264
			1 Chopper		MGM	265
			2 Flakes		MGM	266
128	B	257°/322 Feet	1 Debitage		FGM	267
			1 Flake		MGM	268
129	B	261°/352 Feet	1 Debitage		MGM	269
			1 Flake		MGM	270

Recovery Location	Datum	Location from Datum Azimuth/Range	Quantity/ Weight	Recovery	Material	Cat. No.
130	B	261°/373 Feet	1	Core	Granite	271
131	B	259°/389 Feet	1	Retouched Flake	FGM	272
			1	Utilized Flake	FGM	273
			3	Flakes	FGM	274
			4	Debitage	MGM	275
			1	Flake	MGM	276
132	B	258°/409 Feet	1	Hammerstone Fragment, Undetermined	MGM	277
			1	Flake Scraper	MGM	278
			1	Utilized Flake	MGM	279
			3	Debitage	MGM	280
133	B	256°/399 Feet	1	Hammerstone, Single-Edged	FGM	281
			1	Retouched Flake	MGM	282
			1	Flake	MGM	283
134	B	258°/433 Feet	1	Potsherd	TBW***	284
			2	Flakes	FGM	285
			1	Hammerstone, Circular	MGM	286
			1	Retouched Flake	MGM	287
			1	Debitage	MGM	288
135	B	258°/456 Feet	1	Flake	Chalcedony	289
			1	Core Fragment	FGM	290
			1	Debitage	FGM	291
			3	Flakes	FGM	292
			1	Core	MGM	293
			2	Debitage	MGM	294
			1	Flake	Quartz	295
136	B	258°/496 Feet	3	Potsherds	TBW	296
			1	Debitage	FGM	297
			2	Flakes	FGM	298
			1	Debitage	MGM	299
			1	Flake	MGM	300
			1	Mano Fragment, Undetermined	Quartzite	301
137	B	257°/516 Feet	2	Flakes	FGM	302
			1	Debitage	MGM	303
			3	Flakes	MGM	304

***TBW=Tizon Brown Ware

Recovery Location	Datum	Location from Datum Azimuth/Range	Quantity/ Weight	Recovery	Material	Cat. No.
138	B	257°/532 Feet	2 Potsherds		TBW	305
			1 Utilized Flake		FGM	306
			2 Debitage		FGM	307
			8 Flakes		FGM	308
			1 Debitage		MGM	309
			2 Flakes		MGM	310
139	B	257°/552 Feet	1 Debitage		MGM	311
			1 Flake		MGM	312
140	B	256°/559 Feet	1 Utilized Debitage		FGM	313
			1 Flake		MGM	314
141	B	257°/573 Feet	1 Debitage		FGM	315
			2 Debitage		MGM	316
			0.2 g. Marine Shell		Unidentifiable	317
142	B	257°/606 Feet	1 Flake		Granite	318
			2 Debitage		FGM	319
			1 Flake		FGM	320
			2 Cores		MGM	321
			3 Flakes		MGM	322
143	B	256°/623 Feet	1 Flake		FGM	323
			2 Debitage		MGM	324
			5 Flakes		MGM	325
144	B	257°/631 Feet	1 Mano, Biface		Granite	326
			1 Core		FGM	327
			1 Hammerstone, Circular		MGM	328
			1 Retouched Debitage Fragment		MGM	329
			1 Core		MGM	330
			1 Tested Cobble		MGM	331
145	B	256°/683 Feet	1 Hammerstone, Circular		MGM	332
			1 Core Fragment		MGM	333
			2 Flakes		MGM	334
146	B	256°/646 Feet	1 Core		FGM	335
			3 Debitage		FGM	336
			2 Flakes		FGM	337
			7 Debitage		MGM	338
			5 Flakes		MGM	339
147	C	66°/114 Feet	2 Debitage		MGM	340
			2 Flakes		MGM	341

Recovery Location	Datum	Location from Datum Azimuth/Range	Quantity/ Weight	Recovery	Material	Cat. No.
148	C	77°/128 Feet	1 Hammerstone, Single-Edged		MGM	342
			1 Flake		MGM	343
149	C	88°/94 Feet	1 Core		FGM	344
			2 Debitage		MGM	345
150	C	67°/94 Feet	1 Core		FGM	346
			1 Flake		FGM	347
			1 Hammerstone, Circular		MGM	348
			1 Core		MGM	349
			2 Debitage		MGM	350
			3 Flakes		MGM	351
151	C	93°/73 Feet	1 Core		FGM	352
			1 Core		MGM	353
			2 Flakes		MGM	354
152	C	64°/62 Feet	1 Core		FGM	355
			1 Core		MGM	356
			1 Flake		MGM	357
			1 Hammerstone, Spherical		Quartzite	358
153	C	57°/44 Feet	1 Flake		FGM	359
			1 Retouched Debitage		MGM	360
			2 Cores		MGM	361
			3 Debitage		MGM	362
			4 Flakes		MGM	363
			1 Hammerstone, Spherical		MGM	364
			1 Mano Fragment, Biface, Polished, Pecked		Quartzite	365
154	C	115°/24 Feet	1 Flake		FGM	366
			4 Debitage		MGM	367
			1 Retouched Flake		MGM	368
155	C	99°/26 Feet	2 Debitage		MGM	369
			1 Flake		MGM	370
156	C	76°/9 Feet	1 Debitage		MGM	371
157	C	166°/20 Feet	1 Flake		MGM	372
158	C	301°/48 Feet	2 Debitage		MGM	373
159	D	19°/88 Feet	1 Flake		MGM	374

Recovery Location	Datum	Location from Datum Azimuth/Range	Quantity/ Weight	Recovery	Material	Cat. No.
160	D	34°/95 Feet	1 Debitage		MGM	375
			1 Flake		MGM	376
			1 Debitage		FGM	377
161	D	27°/92 Feet	1 Hammerstone Fragment, Undetermined		MGM	378
162	D	46°/133 Feet	1 Retouched Debitage		MGM	379
163	D	67°/672 Feet	1 Flake		MGM	380
164	D	53°/177 Feet	4 Debitage		MGM	381
			1 Flake		MGM	382
165	D	64°/676 Feet	1 Core		MGM	383
166	D	58°/245 Feet	2 Debitage		MGM	384
167	D	63°/602 Feet	1 Debitage		MGM	385
168	D	59°/280 Feet	1 Retouched Flake		MGM	386
			1 Flake		MGM	387
169	D	63°/579 Feet	1 Debitage		MGM	388
170	D	53°/306 Feet	1 Hammer/Core, Single-Edged		FGM	389
			1 Flake		MGM	390
171	D	63°/564 Feet	1 Retouched Flake		MGM	391
			2 Flakes		MGM	392
172	D	281°/124 Feet	1 Core		MGM	393
			1 Flake		FGM	394
173	D	63°/506 Feet	1 Core		MGM	395
174	D	269°/162 Feet	1 Hammerstone, Single-Edged		FGM	396
			2 Flakes		MGM	397
175	D	59°/472 Feet	1 Core Fragment		FGM	398
			1 Debitage		MGM	399
176	D	256°/280 Feet	1 Retouched Debitage		MGM	400
177	D	57°/324 Feet	1 Flake		MGM	401

Recovery Location	Datum	Location from Datum Azimuth/Range	Quantity/ Weight	Recovery	Material	Cat. No.
178	D	254°/332 Feet	1 Retouched Debitage		MGM	402
			1 Core		MGM	403
179	D	47°/229 Feet	1 Flake		MGM	404
180	D	258°/351 Feet	2 Debitage		MGM	405
181	D	47°/211 Feet	1 Debitage		MGM	406
182	D	256°/341 Feet	2 Debitage		MGM	407
183	D	283°/54 Feet	1 Hammerstone Fragment, Undetermined		FGM	408
			1 Hammerstone, Spherical		MGM	409
			1 Debitage		MGM	410
184	D	257°/397 Feet	2 Debitage		MGM	411
185	D	253°/413 Feet	1 Core		FGM	412
			1 Core		MGM	413
186	D	254°/507 Feet	1 Core		MGM	414
187	D	251°/445 Feet	1 Debitage		MGM	415
			1 Hammer/Core		MGM	416
188	D	254°/528 Feet	1 Debitage		MGM	417
189	D	252°/507 Feet	1 Flake		MGM	418
190	D	249°/649 Feet	1 Debitage		MGM	419
191	D	252°/522 Feet	1 Flake		FGM	420
			2 Flakes		MGM	421
192	D	245°/813 Feet	2 Flakes		MGM	422
193	D	247°/680 Feet	1 Core		MGM	423
			1 Flake		MGM	424
194	D	240°/1016 Feet	1 Core		FGM	425
195	D	246°/725 Feet	1 Flake		FGM	426
			1 Debitage		MGM	427
196	D	255°/461 Feet	1 Retouched Flake		MGM	428

Recovery Location	Datum	Location from Datum Azimuth/Range	Quantity/ Weight	Recovery	Material	Cat. No.
197	D	243°/940 Feet	1 Retouched Flake		FGM	429
			1 Debitage		FGM	430
198	D	239°/1128 Feet	1 Flake		Quartzite	431
199	D	242°/848 Feet	1 Flake		MGM	432
200	F	54°/349 Feet	1 Core		FGM	433
201	F	48°/325 Feet	1 Core		FGM	434
			1 Flake		FGM	435
202	G	133°/36 Feet	1 Debitage		MGM	436
			1 Flake		MGM	437
203	F	47°/316 Feet	1 Metate Fragment, Biface, Polished, Pecked		Granite	438
204	F	45°/338 Feet	4 Flakes		FGM	439
			1 Hammerstone, Single-Edged		MGM	440
			1 Debitage		MGM	441
			5 Flakes		MGM	442
205	F	48°/287 Feet	1 Retouched Flake Fragment		FGM	443
			1 Hammerstone, Spherical		FGM	444
			1 Debitage		FGM	445
206	F	44°/314 Feet	1 Core		FGM	446
			3 Flakes		FGM	447
			1 Utilized Flake		MGM	448
			2 Debitage		MGM	449
			8 Flakes		MGM	450
207	F	8°/126 Feet	1 Core		FGM	451
			1 Core		MGM	452
208	G	112°/68 Feet	1 Debitage		MGM	453
209	F	358°/119 Feet	1 Flake		FGM	454
			1 Debitage		MGM	455
			2 Flakes		MGM	456
210	F	274°/240 Feet	1 Flake		MGM	457
211	F	311°/118 Feet	1 Debitage		FGM	458
			1 Flake		MGM	459

Recovery Location	Datum	Location from Datum Azimuth/Range	Quantity/ Weight	Recovery	Material	Cat. No.
212	G	262°/344 Feet	1 Hammerstone, Circular		FGM	460
			1 Flake		MGM	461
213	H	167°/67 Feet	1 Core Fragment		MGM	462
			1 Flake		MGM	463
214	G	260°/360 Feet	1 Core		FGM	464
215	G	84°/84 Feet	1 Metate Fragment, Uniface		Granite	465
216	G	262°/245 Feet	1 Flake		FGM	466
217	G	75°/32 Feet	1 Debitage		FGM	467
			1 Flake		MGM	468
			1 Hammer/Core Fragment		MGM	469
218	H	164°/86 Feet	1 Debitage		MGM	470
219	G	259°/100 Feet	1 Core		MGM	471
220	H	266°/272 Feet	1 Hammer/Core		MGM	472
221	G	262°/386 Feet	1 Core		MGM	473
			1 Flake		MGM	474
222	H	271°/212 Feet	1 Retouched Flake		MGM	475
223	G	262°/487 Feet	1 Flake		FGM	476
			2 Flakes		MGM	477
224	H	119°/51 Feet	1 Core		MGM	478
225	G	140°/42 Feet	1 Retouched Flake		FGM	479
			1 Core		MGM	480
			3 Debitage		MGM	481
226	E	297°/179 Feet	1 Debitage		FGM	482
			1 Retouched Flake		MGM	483
			1 Flake		MGM	484

Appendix D

Geotechnical Report



Leighton and Associates

GEOTECHNICAL CONSULTANTS

GEOTECHNICAL INVESTIGATION,
PROPOSED SALT CREEK GRAVITY
SEWER INTERCEPTOR
CHULA VISTA, CALIFORNIA

October 11, 2000

Project No. 040129-001

Prepared For:

DUDEK & ASSOCIATES, INC.
605 Third Street
Encinitas, California 92024



A GTG Company

Leighton and Associates

GEOTECHNICAL CONSULTANTS

October 11, 2000

Project No. 040129-001

To: Dudek & Associates
605 Third Street
Encinitas, California 92024

Attention: Mr. Cecil Rehr

Subject: Geotechnical Investigation, Proposed Salt Creek Gravity Sewer Interceptor, Chula Vista, California

In accordance with your request and authorization, we have performed a geotechnical investigation for the proposed Salt Creek Gravity Sewer Interceptor in Chula Vista, California. The accompanying report presents a summary of our investigation and provides conclusions and recommendations relative to the proposed improvements.

Based on the results of our investigation and review of the conceptual project plan prepared by the Dudek & Associates (Dudek, 2000), the proposed improvements are considered feasible from a geotechnical standpoint provided the recommendations outlined in this report are implemented during project design and construction.

If you have any questions regarding our report, please contact this office. We appreciate this opportunity to be of service.

Respectfully submitted,

LEIGHTON AND ASSOCIATES, INC.

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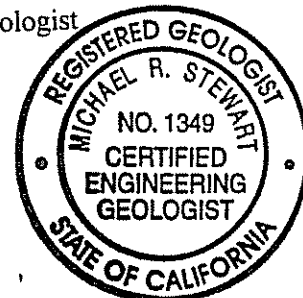
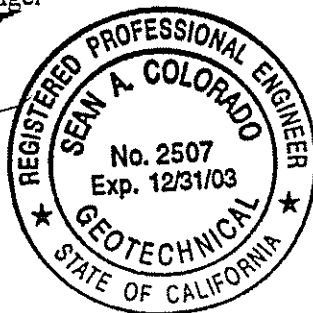


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1.0 INTRODUCTION

1.1 Purpose and Scope

This report presents the results of our geotechnical investigation of the proposed Salt Creek Gravity Sewer Interceptor alignment. The purpose of our investigation was to identify and evaluate the pertinent geotechnical conditions present at the site and to provide geotechnical conclusions and recommendations relative to the proposed construction. Our scope of services included:

- Review of the referenced documents and maps (Appendix A).
- A geotechnical reconnaissance of the site.
- Coordination with Underground Services Alert and City of Chula Vista representatives.
- Acquisition of City of Chula Vista permits for underground excavations in the public right-of-way.
- Preparation and implementation of traffic control plans.
- Excavation of 10 exploratory borings using a large diameter auger rig to depths of 6 to 31 feet below the existing ground surface (bgs).
- Excavation of 18 exploratory boring using a small diameter hollow-stem auger rig to depths of 4 to 31 feet bgs.
- Geologic logging of the borings (Appendix B).
- Laboratory testing of representative samples obtained from the subsurface exploration. Results of these tests are presented in Appendix C of this report and on the borings logs (Appendix B).
- Geotechnical analysis of data obtained.
- Preparation of this report presenting our findings, conclusions, and recommendations regarding the proposed improvements.

1.2 Site Description

The proposed sewer main will generally be located beneath portions of the existing Main Street and Otay Valley Road alignments and in undeveloped areas east of Otay Valley Road in the city of Chula Vista, California (see Site Location/Boring Location Map, Figure 1).

From the westerly beginning, the alignment trends south a short distance within a wildlife sanctuary. The alignment turns east along the northerly flanks of Otay River and extends beneath Interstate 5 an overpass structure (at approximately Station 21+00 to 23+00) along the unpaved alignment of Louret Avenue. At Hollister Street the alignment begins a sequence of north-south then east-west segments as follows: north along Hollister Street, east under the San Diego Trolley tracks (at approximately Station 41+00 to 42+25) embankment, continues east of the tracks through



commercial property and then along Faivre Street, north at 27th Street, and then east at Main Street. The alignment continues east along Main Street until the intersection with Date Street. At Date Street the alignment continues in the easterly direction along Otay Valley Road. The alignment continues east along Otay Valley Road and crosses beneath an Interstate 805 overpass structure (at approximately Station 196+30 to 197+90).

The alignment continues east approximately 1.75 miles along Otay Valley Road. Where Otay Valley Road turn southeast, the alignment continues east along an unpaved road through the Hansen quarry site. The alignment continues east on the unpaved road which generally parallels the Otay River alignment. At the intersection with Salt Creek, the proposed alignment begins to parallel that tributary in a northerly direction.

Along the Salt Creek segment, the alignment is initially east of the creek. For the final segment the alignment is planned west of the creek and will terminate with a short west trending segment within Orange Avenue.

1.3 Proposed Improvements

Based on our review of the proposed project plans, we understand the proposed sewer main will vary in depth from approximately 10 to 27 feet bgs. The proposed alignment will traverse existing streets, undeveloped rural areas east of the future Otay Valley Road alignment, and an estuary at the westernmost extension of sewer main. We understand that the proposed improvements consist of construction of approximately 60,000 linear feet of PVC pipe sewer main with diameters ranging from 21 to 36 inches constructed using primarily cut-and-cover methods. We also expect that the segment beneath the existing trolley track embankment will be jacked. We further understand that the proposed sewer main will be connected to a previously installed portion of the pipeline located between Station 517+00 and 565+25.



2.0 SUBSURFACE EXPLORATION AND LABORATORY TESTING

2.1 Subsurface Exploration

Our subsurface exploration consisted of the excavation of ten 30-inch diameter auger borings and eighteen 8-inch diameter hollow-stem auger borings to approximate depths ranging from 4 feet to 31 feet bgs. The purpose of these excavations was to evaluate the engineering characteristics of the onsite soils relative to the proposed sewer main. Prior to excavation of the borings, location and identification of nearby underground utilities were coordinated with Underground Service Alert.

The borings were logged by representatives from our firm. Relatively undisturbed and disturbed drive samples and bulk samples were collected during drilling for laboratory testing. The approximate locations of the borings are shown on Figures 2 through 12. After logging, the borings were backfilled with native soils. Logs of borings are presented in Appendix B of this report.

2.2 Laboratory Testing

Selected samples were tested for shear strength, moisture content, and density. The results of our laboratory testing along with a summary of the testing procedures are presented in Appendix C of this report. In-situ moisture and density test results are presented on the borings logs (Appendix B).



3.0 SUMMARY OF GEOLOGIC CONDITIONS

3.1 Regional Geology

The site is located within the coastal subprovince of the Peninsular Ranges Geomorphic Province, near the western edge of the southern California batholith. The topography at the edge of the batholith changes from the rugged landforms developed on the batholith to the more subdued landforms which typify the softer sedimentary formations of the coastal plain such as are present on the site.

Specifically, the site is underlain by varying formational and bedrock units including Quaternary-aged Stream Terrace Deposits, Tertiary-aged San Diego and Mission Valley Formations, an unnamed Tertiary-aged Fanglomerate, and Jurassic-aged Santiago Peak Volcanics. Subsequent to the deposition of these units, erosion and regional tectonic uplift created the valleys and ridges of the area. Human influences, recent weathering and erosional processes have produced the Quaternary and recent surficial units including undocumented fill soils, alluvium, slope wash colluvium, and topsoil which mantle the formational and bedrock materials along the proposed sewer alignment.

3.2 Site-Specific Geology

Formational and bedrock materials including Quaternary-aged Stream Terrace Deposits; Tertiary-aged San Diego, Mission Valley, and Unnamed Fanglomerate Formations; Jurassic-aged Santiago Peak Volcanics; and surficial units consisting of alluvium/slopewash, topsoil, and undocumented fill soils were encountered during our investigation of the site. Brief descriptions of the geologic units encountered are provided below.

3.2.1 Artificial Fill

As encountered during our investigation, artificial fill materials generally consist of reddish brown to brown and yellow brown to gray brown, damp to moist, medium dense to dense and hard, silty, fine to clayey sand and sandy clay with gravel. This material generally exists within graded portions of Main Street and Otay Valley Road and in undeveloped areas east of Otay Valley Road. Artificial Fill material was encountered in Borings B-7, B-8, B-16, B-18, B-20, B-22, B-23, B-27, and B-28 to depths ranging from 1.5 to 29.5 feet bgs (Appendix B.) Cobbles were also encountered at Borings B-7 and B-8 (see Figure 8). Based on our conversations with Hanson plant officials, we understand that the area near Boring B-7 was previously mined and subsequently filled with fill materials containing boulders and concrete rubble.

3.2.2 Topsoil

As encountered, topsoil generally consists of dark gray brown, dry, dense to stiff, silty, clayey, coarse grained sand to sandy silt with pebbles and organics. This material was generally encountered as surficial soils in Borings B-1 and B-2 to depths of 2 and 3 feet bgs, respectively (see Figure 10).



3.2.3 Alluvium/ Slopewash

Alluvial soils and slope wash generally consists of grayish brown to yellowish brown and red brown, dry to wet, loose to very dense, slightly clayey and silty fine to medium grained sand and clay with gravel and cobbles. Interbedded firm to stiff silt and clay layers were also encountered. Alluvial material was encountered in Borings B-1, B-4, B-5, B-6, B-9, B-10 through B-16, B-19, B-20, B-22, and B-25 at depths starting from 0 to 9 feet bgs and continuing from 6 to 30.9 feet bgs (Appendix B). In addition, we anticipate this material to be encountered at the canyon bottom along the Salt Creek Segment beyond Station 562+25 (see Figures 11 and 12). Practical refusal was encountered within this unit in Borings B-5, B-11, B-13, B-14, B-15, B-16 and B-25.

Areas of loose, saturated, and potentially compressible soils were observed in Borings B-11 B-12, and B-13 at depths to 15 feet bgs, (see Figure 2). We anticipated that portions of this material may require removal below the elevation of the proposed pipeline. Removal depths are anticipated to be within 2 feet of the proposed excavation bottom (see Section 6.1.3). In addition, loose friable and caving sands were observed in Boring B-4 (see Figure 9).

3.2.4 Stream Terrace Deposits

Stream Terrace Deposits exist on the south-facing flank of the relatively flat mesa-top (located in the central and eastern portions of the site) unconformably overlying the San Diego and Mission Valley Formation or Santiago Peak Volcanics. The soil comprising the Stream Terrace Deposits is generally composed of reddish brown to yellowish gray, dry to moist, dense to very dense, cobbly sand, silt, and stiff clay with scattered cemented zones. This material was encountered at 0 to 27 feet bgs in Borings B-2, B-3, B-17, B-18, B-20, B-21, and B-26 through B-28. Practical refusal was encountered within this unit in Borings B-17, B-18, B-20, and B-26.

3.2.5 San Diego Formation

The late Pliocene-aged San Diego Formation is located beneath the Terrace Deposits. This material varies from an iron stained sandstone with occasional cobble conglomerate supported in a yellow brown, fine to medium-grained sand matrix. The material was encountered in Boring B-19 and B-27 at depths of 20 and 18 feet bgs, respectively (Appendix B).

3.2.6 Mission Valley Formation

The Mission Valley Formation underlies the mid-easterly section of the proposed alignment. As encountered during our investigation, this sedimentary formation primarily consists of slightly cemented, light brown to grayish brown, and orange brown, medium dense to very dense, fine to medium sand. Occasional cemented interbeds and hard concretionary layers may be encountered within this unit. This material was



encountered in Borings B-9, B-21, B-22, and B-24 at depths ranging from 0 to 19 feet bgs (Appendix B).

3.2.7 Unnamed Fanglomerate

An unnamed Fanglomerate unit outcrops at the eastern portion of the alignment. The Fanglomerate lies conformably on Santiago Peak Volcanics. This material consists of a light brown, damp, medium dense to very dense, fine to medium sand with gravel and cobble. This unit was encountered in Boring B-1 at a depth of 12 feet bgs (see Figure 8). In addition, we anticipate this unit to be encountered during excavation above the canyon bottom along the Salt Creek Segment beyond Station 562+25 (see Figures 11 and 12):

3.2.8 Santiago Peak Volcanics

As encountered, this unit of bedrock is generally limited to the eastern portion of the alignment. According to the geologic mapping performed by Kennedy and Tan (Kennedy and Tan, 1977), outcrops of this unit exist from approximately Station 352+00 and 368+00 and may be encountered beyond these limits during excavation. This unit typically consists of orange-brown, medium dense (in the upper 4 feet of the weathered zone) to brown-black, very dense (at depth) relatively intact dacitic and andesitic rock. This material was encountered at a depth of 8 feet bgs in Boring B-6 (see Figure 8). Refusal was met upon drilling on relatively competent rock in the upper 3.5 feet.

3.3 Surface and Ground Water

The proposed alignment crosses Salt Creek near Station 481+75, 515+75, and 563+50. Surface water should be anticipated at these locations. The low lying areas near the wildlife reserve may also be susceptible to surface flow. Ground water was encountered during our field study at the eastern portion of the alignment in Borings B-1 (approximately Station 496+00) at an elevation of approximately 233 feet (msl); B-2 (approximately Station 477+00) at an elevation of approximately 211 feet msl; and at the western portion of the alignment in the vicinity of Borings B-11 through B-13 (approximately Station 1+00 to 28+00) at elevations ranging from 4 to 7 feet msl. Ground water elevations may fluctuate seasonally in response to rainfall, flooding events, etc. In addition, the proposed alignment runs roughly parallel to Salt Creek from Station 563+50 to 623+00 (see Figures 11 and 12). We anticipate that ground water and or seepage may be encountered in trench excavations at contact areas of dense formational units and/or at an elevation of the adjacent Salt Creek and the adjacent Otay River. Recommendations for control of groundwater and surface water are provided in Section 6.6 of this report.

3.4 Soil Compressibility

Based on our field exploration and laboratory testing, the site soils are predominantly sands, and silts. Based on our observation, loose saturated alluvial deposits located at the western portion of the alignment (approximately Station 1+00 to 28+00) may have medium to high compressibility. In addition, we anticipate saturated alluvial conditions at the eastern portion of the alignment in areas



where the proposed pipeline crosses and/or runs parallel to Salt Creek at the approximate channel bottom elevation.

Typically, presence of loose saturated conditions underneath the subgrade results in ground subsidence when subjected to increased loading. The magnitude of subsidence is difficult to quantify but depends upon various factors such as thickness, aerial extent, and proximity to groundwater table, stress history, disturbances during construction, and future loading changes. Recommendations for mitigation of settlement are provided in Section 6.2 of this report.



4.0 FAULTING AND SEISMICITY

4.1 Faulting

Our discussion of faults on the site is prefaced with a discussion of California legislation and state policies concerning the classification and land-use criteria associated with faults. By definition of the California Mining and Geology Board, an active fault is a fault which has had surface displacement within Holocene time (about the last 11,000 years). The State Geologist has defined a potentially active fault as any fault considered to have been active during Quaternary time (last 1,600,000 years). This definition is used in delineating Earthquake Fault Zones as mandated by the Alquist-Priolo Geologic Hazards Zones Act of 1972 and as most recently revised in 1997. The intent of this act is to regulate development near active faults so as to mitigate the hazards of surface fault rupture" (Hart, 1997). Based on our review of the Fault-Rupture Hazard Zones, the site is not located within any Fault-Rupture Hazard Zones as created by the Alquist-Priolo Act (Hart, 1997).

San Diego, like the rest of southern California, is seismically active as a result of being located near the active margin between the North American and Pacific tectonic plates. The principal source of seismic activity is movement along the northwest-trending regional fault zones such as the San Andreas, San Jacinto and Elsinore Faults Zones, as well as along less active faults such as the Rose Canyon Fault Zone. Seismic activity is also possible (although less likely) along potentially active faults such as the La Nacion Fault Zone and the related Sweetwater Fault.

Our review of geologic literature pertaining to the site area indicates that there are no known major active faults on or in the immediate vicinity of the site (Kennedy and Tan, 1977). Based on our review, an unnamed fault was mapped south of the proposed alignment along Beyer Way and through the Otay Valley River Basin (Kennedy and Tan, 1977 and Treiman, 1984). The nearest known active fault is the San Diego Bay extension of the Rose Canyon Fault Zone located approximately 8.2 miles west of the site. In addition based on extrapolation of fault mapping performed by Kennedy and Tan (Kennedy and Tan, 1977), Treiman (Treiman, 1984), and our professional experience, splays of the Rose Canyon Fault Zone are believed to be within 0.5 miles of the western most portion of the site. The potentially-active La Nacion Fault Zone (LNFZ) has been mapped through the proposed alignment from approximately Station 219+50 to 268+00.

4.2 Seismicity

The site can be considered to lie within a seismically active region, as can all of Southern California. Table 1 (below) indicates potential seismic events that could be produced by the maximum credible earthquake. A maximum credible earthquake is the maximum expectable earthquake given the presently known tectonic framework. Site-specific seismic parameters included in Table 1 are the distances to the causative faults, earthquake magnitudes, and expected ground accelerations (Appendix E). In lieu of seismic parameters generated by EQFAULT for the Rose Canyon Fault, a deterministic seismic analysis was performed using the Joyner and Boore (Joyner and Boore, 1997) attenuation relationship and a closest distance to the fault of 0.5 miles.



Table 1 Seismic Parameters for Active Faults				
Potential Causative Fault	Distance from Fault to Site (Miles)	Slip Rate (mm/yr)	Maximum Moment Magnitude	Peak Horizontal Ground Acceleration (g)
Rose Canyon	0.5	1.5	6.9	0.98
Coronado Bank	12.6	3.0	7.4	0.46
Newport-Inglewood (Offshore)	43.6	1.5	6.9	0.14

As indicated in Table 1, the Rose Canyon Fault is the 'active' fault considered having the most significant effect at the site from a design standpoint. A maximum credible earthquake of moment magnitude 6.9 on the fault could produce an estimated peak horizontal ground acceleration 0.98g at the site. The Rose Canyon Fault is considered a Type B seismic source according to Table 16-U of the 1997 Uniform Building code (ICBO, 1997).

The effect of seismic shaking may be mitigated by adhering to the Uniform Building code or state-of-the-art seismic design parameters of the Structural Engineers Association of California.

The soil parameters in accordance with UBC 1997 and other guidelines, are as follows:

Soil Profile Types = S_c , S_d , and S_e (Table 16-J, 1997 UBC)

Seismic Zone = 4 (Figure 16-2, 1997 UBC)

Seismic Source Type = B (Table 16-U, 1997 UBC)

$N_a = 1.3$ (Table 16-S, 1997 UBC)

$N_v = 1.6$ (Table 16-T, 1997 UBC)

Secondary effects that can be associated with severe ground shaking following a relatively large earthquake which include shallow ground rupture, soil liquefaction and dynamic settlement. These secondary effects of seismic shaking are discussed in the following sections.

4.2.1 Shallow Ground Rupture

Based on mapping by Kennedy and Tan (Kennedy and Tan, 1977), the potentially active LNFZ has been mapped through the proposed alignment from approximately Station 219+50 to 268+00. Although less likely, seismic activity, including shallow ground rupture is possible where the proposed alignment crosses the LNFZ.



4.2.2 Liquefaction and Dynamic Settlement

Liquefaction is a seismic phenomenon in which loose, saturated, fine-grained granular soils behave similarly to a fluid when subjected to high-intensity ground shaking. Liquefaction occurs when three general conditions exist: 1) shallow-groundwater; 2) low density non-cohesive soils; and 3) high-intensity ground motion. Based on SPT blow counts, loose and saturated alluvial soils were identified below the proposed pipeline elevation at the western portion of the site, near Station 1+00 to 28+00, and are considered liquefiable in their present state.



5.0 CONCLUSIONS

5.1 Conclusions

Based on our geotechnical investigation, it is our opinion that the development of the site is feasible from a geotechnical standpoint. There appear to be no significant geotechnical constraints on the site that cannot be mitigated by proper planning, design, and sound construction practices. Our recommendations for proper site development are presented in the following sections. The following items discuss the major conclusions based on our site investigation.

- The soils encountered were generally evaluated to have favorable load-settlement characteristics at the depth of the pipe. Potentially compressible materials are generally limited to the western portion of the alignment from Stations 1+00 and 28+00. Localized potentially compressible materials maybe encountered at the eastern portion of the site in saturated alluvial soils adjacent to Salt Creek. Recommendations for removal of potentially compressible soils and mitigation of potential settlement are provided in sections 6.1.3 and 6.2, respectively. ✓
- Shallow excavations of the onsite materials may generally be accomplished with conventional heavy-duty earthwork equipment. Heavy ripping or breaking will likely be required where cemented and concretionary lenses are encountered in deeper excavations. Our preliminary interpretation of rippability with respect to geologic unit is provided in Section 6.1.6 of this report. ✓
- Surface water should be anticipated at locations where the proposed alignment crosses Salt Creek (near Stations 481+75, 515+75, and 563+50) and areas within the flood plain. Ground water was encountered during our field study at the eastern portion of the alignment in Borings B-1 (approximately Station 496+00) at an elevation of approximately 233 feet (msl); B-2 (approximately Station 477+00) at an elevation of approximately 211 feet msl; and at the western portion of the alignment near Borings B-11 through B-13 (approximately Station 1+00 to 28+00) at elevations ranging from 4 to 7 feet msl. Groundwater conditions are also anticipated at the eastern portion of the alignment in areas where the proposed pipeline crosses and/or runs parallel to Salt Creek. Recommendations for control of groundwater and surface water are provided in Section 6.6 of this report. ✓
- Active faults are not known to cross the proposed alignment. Based on mapping by Kennedy and Tan (Kennedy and Tan, 1977), the potentially active La Nacion Fault Zone (LNFZ) has been mapped through the proposed alignment from approximately Station 219+50 to 268+00. Although less likely, seismic activity, including shallow ground rupture is possible where the proposed alignment crosses the LNFZ. ✓
- The peak horizontal ground acceleration on the site due to the maximum credible earthquake is postulated to be 0.98g.



6.0 RECOMMENDATIONS

6.1 Earthwork

Grading and earthwork should be performed in accordance with the following recommendations and the General Earthwork and Grading Specifications for Rough Grading included as Appendix D.

6.1.1 Site Preparation

Prior to grading, areas should be cleared of surface vegetation and buried obstructions. Voids resulting from removal of buried obstructions that extend below finished site grades should be backfilled with properly compacted fill soils. Utilities should be properly abandoned in accordance with appropriate local codes. All grading should be performed under the testing and observation of a qualified geotechnical consultant. *engineer*

6.1.2 Excavations and Shoring

Based on our observations during subsurface investigation and results of laboratory tests, shallow excavations of the onsite materials may generally be accomplished with conventional heavy-duty earthwork equipment. Heavy ripping or breaking will likely be required where cemented and concretionary lenses are encountered in deeper excavations. Excavations into onsite Unnamed Fanglomerate and Santiago Peak Volcanics may be extremely difficult and specialized equipment is anticipated (such as breaking and/or blasting) to excavate this material. Our preliminary interpretation of rippability characteristics of onsite material is provided in Section 6.1.6 of this report

All excavation should comply with OSHA requirements. For preliminary planning, sloping of surficial fill soils at 1 to 1 (horizontal to vertical) may be assumed. Loose and/or saturated artificial fill, and alluvium present on site may cave during trenching operations. Special care should be taken for excavation near existing improvements and, to verify that the integrity of the existing improvements will not be impacted. For shored excavations, the geotechnical consultant should review the contractors proposed shoring design. In addition, shoring and excavation design in the area of Interstate 805 at approximately Station 196+30 to 194+90) and I-5 (at approximately Station 21+00 to 23+00) should be performed in accordance with the Caltrans Trenching and Shoring Manual (Caltrans, 1990).

We anticipate that scattered amounts of oversize material may be generated during excavation of the cemented lenses within the formational units. Recommendations for treatment of oversize material are included in the attached General Earthwork and Grading Specifications for Rough Grading (Appendix D). In general, oversize material should be hauled off site.



6.1.3 Removals

Removal depths should be evaluated by a qualified geotechnical consultant during excavation. Significant removals of compressible material are not anticipated, and should generally be limited to within 2 to 3 feet of the bottom of the proposed sewer line. We anticipate that potentially compressible soils will generally be encountered in saturated portions of the alluvium primarily located at the western end of the alignment. In addition, potentially compressible materials may be encountered at the eastern portion of the alignment in saturated alluvium near the existing Salt Creek channel.

Compressible soils beneath the proposed sewer alignment should be removed to a minimum depth of 2 feet below the bottom of the proposed sewer line. The bottom of the excavation should be overlain with Mirafi 600x (or equivalent) and removed soil should be replaced with 2 feet of crushed aggregate prior to additional fill placement or the construction of improvements.

6.1.4 Pipe Bedding and Pipe Zone Backfill

Pipe bedding should extend to a depth of at least 6 inches below the pipe barrel and the pipe zone backfill should extend from the top of the bedding to a height of at least 12 inches over the top of the pipe. In addition, there should be a range of 6 to 12 inches of pipe zone backfill material on either side of the pipe.

The bedding and pipe zone material may consist of compacted free draining sand, gravel or crushed rock ($SE > 30$) in accordance with Appendix D of this report and the City of Chula Vista specifications.

The bedding layer should be supported on firm, competent material, as determined by the Geotechnical Consultant and provisions of the above reference. Disturbed or loose materials at excavation bottom should be removed to expose firm native material. We anticipate that firm soil conditions exist at proposed invert depths, although some soft and/or loose soils may be encountered. Removals should be performed as previously described in Section 6.1.3 of this report and in accordance with the recommendations made during the course of excavation.

6.1.5 Trench Zone

The onsite soils are generally suitable for use as compacted structural fill provided they are free of oversize material, organic materials, and debris. Saturated soils should be dried back and/or replaced with import soils. The optimum lift thickness required to produce a uniformly compacted fill will depend on the type and size of compaction equipment used. In general, fill should be placed in uniform lifts not exceeding 8 inches in thickness. Materials greater than 6 inches in maximum dimension should not be utilized in fills.

Fill soils (onsite and import) should be placed near or above optimum moisture content and compacted to a minimum of 90 percent relative compaction (based on ASTM Test Method D1557). Placement and compaction of fill should be performed in accordance



with local grading ordinances under the observation and testing of a qualified geotechnical consultant. Densification by water jetting within the trench zone is not recommended.

6.1.6 Rippability

Based on our preliminary findings and our experience with the following geologic units, the following is our preliminary interpretation of rippability with respect to geologic unit:

Table 2 Generalized Rippability Characteristics	
Geologic Unit	General Excavation Characteristic
Artificial Fill, Topsoil, and Alluvium/Slopewash	Easy ripping, localized debris, oversize material may be encountered
Stream Terrace Deposits	Moderately difficult to difficult ripping, possible localized cemented layers
Baypoint Formation	Easy to Moderately difficult ripping
San Diego Formation	Easy to Moderately difficult ripping
Mission Valley Formation	Easy to Moderately difficult ripping
Unnamed Fanglomerate	Difficult ripping, possible localized cemented layers and oversize material
Santiago Peak Volcanics	Moderate to Very difficult ripping, probable local to general blasting or breaking, blasting required with increased depth, oversize material possible

“Difficult ripping” refers to rocks, in which it becomes difficult to achieve tooth penetration, sharply reducing ripping production. Localized blasting or breaking may be necessary in order to maintain a desired ripping production rate. “Very difficult ripping” refers to rocks in which the use of heavy construction equipment is likely to cease being a cost-effective method of excavation (necessitating the use of explosives to maintain a desired excavation rate).

As indicated in Table 3, refusal was encountered in several borings at depths less than the proposed sewer line depth. For a more detailed analysis of rippability characteristics of geologic a rippability study may be performed. Rippability studies may include a seismic refraction survey and/or trackhoe excavation.



Table 3
Summary of Geologic Conditions

Boring No. and Approximate Station	Total Depth (Feet)	Approx. depth for proposed Sewer (Top of Pipe)	Geologic Unit at Total Depth	Refusal
B-1, 496 + 00	15.5	10.5	Fanglomerate Deposits	Yes
B-2, 472 + 70	22.0	10.0	Stream Terrace Deposits	No
B-3, 437 + 60	31.0	15.0	Stream Terrace Deposits	No
B-4, 404 + 35	12.0	11.0	Alluvium	No
B-5, 385 + 75	6.0	8.0	Alluvium	Yes
B-6, 364 + 25	12.0	8.5	Santiago Peak Volcanics	Yes
B-7, 346 + 50	8.0	14.5	Artificial Fill	Yes
B-8, 332 + 00	13.0	8.0	Artificial Fill	Yes
B-9, 311 + 15	23.0	11.0	Mission Valley Formation	No
B-10, 293 + 75	22.0	22.0	Alluvium	No
B-11, 6 + 75	24.0	9.0	Alluvium	Yes
B-12, 13 + 50	31.0	11.0	Alluvium	No
B-13, 26 + 00	20.5	10.0	Alluvium	Yes
B-14, 46 + 40	15.0	7.5	Alluvium	Yes
B-15, 59 + 75	7.0	9.0	Alluvium/Slopewash	Yes
B-16, 69 + 00	9.0	8.0	Alluvium	Yes
B-17, 141 + 00	6.0	7.5	Stream Terrace Deposits	Yes
B-18, 159 + 00	4.0	19.0	Stream Terrace Deposits	Yes
B-19, 164 + 75	20.5	14.5	San Diego Formation	No
B-20, 179 + 00	28.0	25.5	Stream Terrace Deposits	Yes
B-21, 227 + 75	29.5	18.0	Mission Valley Formation	No
B-22, 241 + 25	29.5	27.0	Mission Valley Formation	No
B-23, 256 + 40	29.5	19.0	Artificial Fill	No
B-24, 273 + 50	20.0	11.0	Mission Valley Formation	No
B-25, 77 + 35	14.0	9.0	Alluvium	Yes
B-26, 205 + 50	25.0	21.5	Stream Terrace Deposits	Yes
B-27, 189 + 60	29.5	24.0	San Diego Formation	No
B-28, 113 + 75	6.5	8.0	Stream Terrace Deposits	No



6.2 Settlement

The loose, saturated, and potentially compressible alluvium located at the western end of the alignment and possibly along portions of the Salt Creek segment of the alignment will be subject to settlement if the existing stress conditions are altered during construction; therefore, the following recommendations should be considered for proposed construction:

- Dewatering will increase the overburden pressure resulting in unwanted settlement if it is done for wide areas. Due to the level of groundwater existing above the proposed inlet elevation, we anticipate dewatering methods to consist of a conventional well-point system at the western portion of the alignment. We recommend that measures to confine the dewatering to the alignment be implemented.
- Sections of pipe foundations and pipe zone underlain by loose, saturated soil conditions should be provided with stabilized fabric.
- If open-grade rock is used around the pipe and within any portion of trench backfill, it should be separated from surrounding finer grain material by installing filter fabric to prevent piping and settlement; and
- Vibratory methods of shoring installation adjacent to existing improvements and during shoring removal should be avoided. If vibratory methods are used we recommend settlement analysis and/or settlement monitoring of the pipe and adjacent ground.

6.3 Lateral Earth Pressure

Based on laboratory test results and our experience with soils in the area, we recommend lateral earth pressures as follows:

<u>Conditions</u>	<u>Equivalent Fluid Pressure (psf/ft)</u>
Active	40
At-Rest	60
Passive	300

Unrestrained (yielding) cantilever walls should be designed for active equivalent pressure values provided above. In the design of walls restrained from movement at the top (nonyielding), the at-rest pressures should be used. Determination of appropriate design conditions (active or at-rest) depends on flexibility. If a rotation of more than 0.001 radian (0.06 degrees) at the base or at the top is allowed, active pressure conditions apply; otherwise, at-rest condition governs.

Where hydrostatic conditions are considered, an additional pressure equal to 62.4 pcf multiplied by the depth below the design elevation should be applied in a direction normal to the surface being considered. Below the design water table, the passive resistance should also be reduced to 150 pcf.

Surcharge loads (dead or live) should be added to the indicated lateral pressures and should be applied uniformly, if such loads are within a horizontal distance that is less than the exposed wall height. A lateral surcharge load for a restrained or unrestrained wall resulting from automobile traffic may be assumed to be equivalent to a uniform pressure of 75 psf which is in addition to



the equivalent fluid pressure given above. For other uniform surcharge loads, a uniform lateral pressure equal to $0.35q$ should be applied to the wall (where q is the surcharge pressure in psf). Lateral soil resistance developed against lateral structural movement can be obtained from the passive pressure provided above. Further, for sliding resistance, the friction coefficient of 0.30 may be used at the concrete and soil interface. These values may be increased by one-third when considering loads of short duration including wind or seismic loads. The total resistance may be taken as the sum of the frictional and passive resistance provided that the passive portion does not exceed two-thirds of the total resistance.

Based on design for the proposed improvements, excavations up to 34 feet are anticipated. Accordingly, and because of the limited space, temporary shoring of vertical excavations may be required. We recommend that excavations be retained either by a cantilever shoring system deriving passive support from drilled soldier piles (lagging-shoring system) or a restrained tie-back and pile system. Based on our experience, if lateral movement of the shoring system on the order of 1 to 2 inches cannot be tolerated or for walls higher than 20 feet, we recommend the utilization of a restrained tie-back and pile or braced system.

For design of cantilevered shoring, we recommend a triangular pressure distribution resulting from an equivalent fluid pressure of 35 pcf. Lateral earth pressures for design of restrained shoring may be taken as a rectangular pressure of $25H$ (psf) where H is the height (feet) of the excavation, including slopes above. For preliminary design of tie-backs, we recommend a concrete-soil bond stress of 500 psf of concrete-soil interface area for straight shaft anchors. This value should be evaluated by field tests. Anchors should be grouted only behind the 40-degree line up from the excavation base. This portion should also be used for calculating resisting forces. Tie-back anchors should be individually proof-tested to 130 percent of design capacity. Further details and design criteria for tie-backs can be provided as appropriate. Since design of retaining systems is sensitive to surcharge pressures behind the excavation, we recommend that this office be consulted if unusual load conditions are anticipated.

Settlement monitoring of adjacent sidewalks and structures should be considered to evaluate the performance of the shoring. Shoring of the excavation is the responsibility of the contractor. Extreme caution should be used to minimize damage to existing pavement, utilities, and/or structures caused by settlement or reduction of lateral support.

Vibratory methods of shoring installation adjacent to existing improvements and during shoring removal should be avoided. If vibratory methods are used during installation adjacent to existing improvements or during shoring removal, we recommend settlement analysis and/or settlement monitoring of the adjacent soil.

6.4 Pipe Jacking

We anticipate jacking of the proposed sewer line beneath the existing trolley tracks (at approximately Station 41+00 to 42+25). The passive earth pressure developed at the location of the thrust block may provide lateral support during pipe jacking operations. The ultimate passive resistance for design of thrust blocks may be determined from lateral earth pressures provided in Section 6.3 of this report. A factor of safety of 2 should be included in the design of any thrust blocks. In addition, pipe jacking beneath the existing trolley should be performed in accordance with the American Railway Engineering Association (AREA) Manual for Railway Engineering (AREA, 1988-89).



6.5 Existing Utilities and Improvements

The proposed sewer improvement is located near and crosses several existing utilities. The contractor should exercise care to not disturb these utilities and or support them during construction. Compacting backfill above the pipe zone would be detrimental to surrounding utilities, we recommend a weak slurry mix be used for backfilling operations. These areas should be limited to a zone between two pipes and not exceeding two feet on either side of the crossing.

6.6 Control of Ground Water and Surface Water

During construction, wet and/or saturated conditions should be anticipated at the western portion of the alignment near Stations 1+00 to 28+00, 404+35, 481+75 to 496+00, and Station 515+75. Surface water, when encountered, should be prevented from entering the excavation. In addition, groundwater should be anticipated beyond Station 515+75 at the elevation of the adjacent Salt Creek. In addition, seepage may be encountered in trench excavations at contact areas of dense formational units. We anticipate dewatering at the aforementioned areas consisting of:

- 1) A conventional well-point system at the western portion of the alignment near Stations 1+00 to 28+00. We recommend that measures to confine the dewatering to the alignment be implemented. and;
- 2) Either a tight sheathing or pumping from sumps located at the trench base or a combination of both in areas of groundwater seepage at contact areas of dense formational units.

Disposal of any groundwater should be in accordance with the guidelines and requirements of the County of San Diego Department of Environmental Health and City of the Chula Vista requirements.

6.7 Trench Resurfacing

Trench resurfacing should be performed in accordance with San Diego Regional Standard Drawing No. G-24 and G-25 and the City of Chula Vista requirements.



7.0 CONSTRUCTION OBSERVATION AND PLAN REVIEW

The recommendations provided in this report are based on subsurface conditions disclosed by field reconnaissance and widely-spaced exploratory borings. All construction should be performed under the observation and testing of the Geotechnical Consultant at the following stages:

- During trench excavation;
- During dewatering operations;
- During shoring;
- During placement of bedding and backfill;
- During jacking;
- During pavement capping; and
- When any unusual or unexpected geotechnical conditions are encountered.

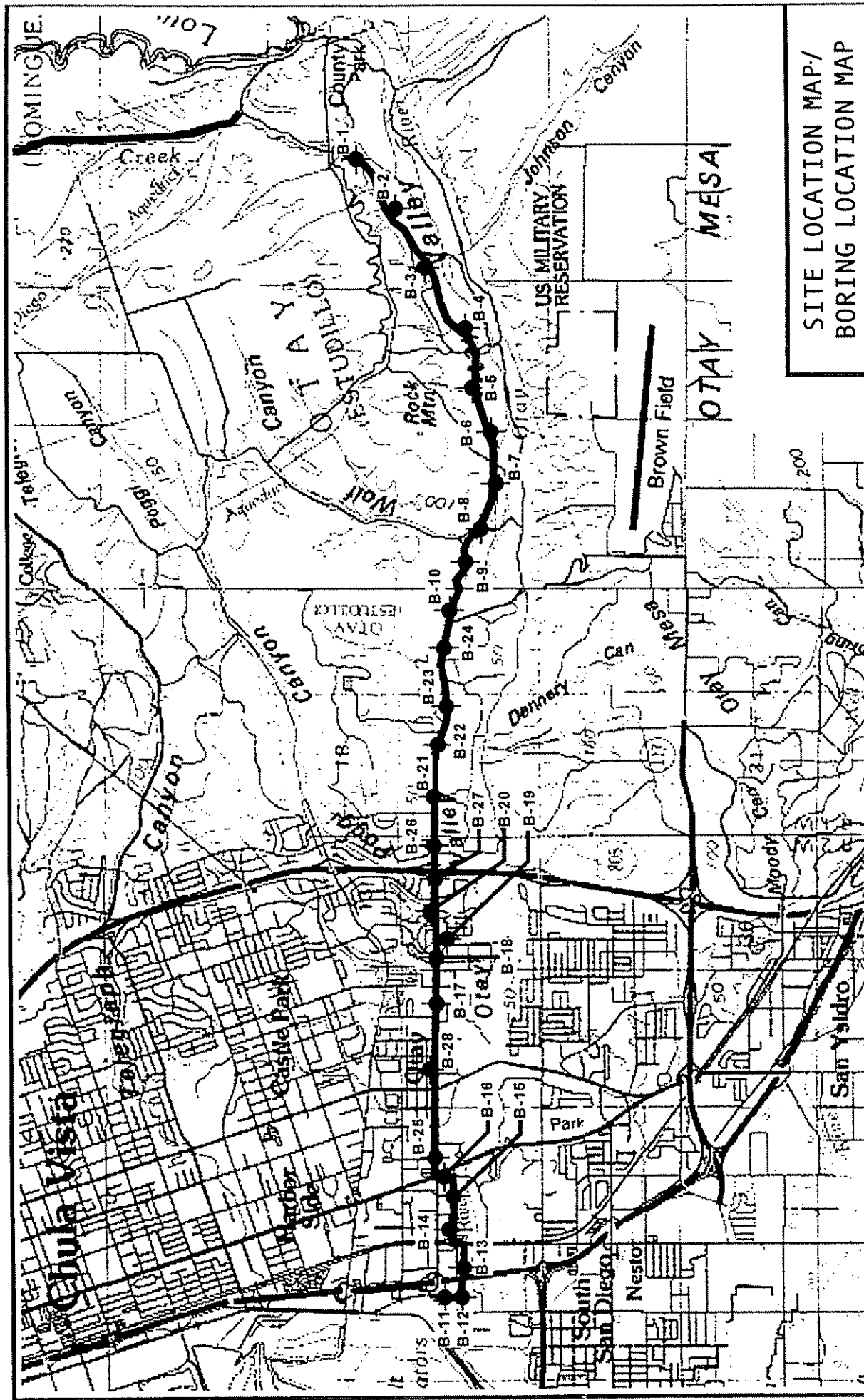
The final sewer improvement plans should implement the recommendations presented in this report and should be reviewed by the project geotechnical consultant.



8.0 LIMITATIONS

The conclusions and recommendations in this report are based in part upon data that were obtained from a limited number of observations, site visits, excavations, samples, and tests. Such information is by necessity incomplete. The nature of many sites is such that differing geotechnical or geological conditions can occur within small distances and under varying climatic conditions. Changes in subsurface conditions can and do occur over time. Therefore, the findings, conclusions, and recommendations presented in this report can be relied upon only if Leighton has the opportunity to observe the subsurface conditions during grading and construction of the project, in order to confirm that our preliminary findings are representative for the site.





SITE LOCATION MAP/ BORING LOCATION MAP

Dudek and Associates
Salt Creek Sewer Alignment
Chula Vista, California

Project No.	040129-001
Scale	Not to scale
Engr./Geol.	SAC/MRS
Drafted By	KAM
Date	October 2000



Figure No. 1

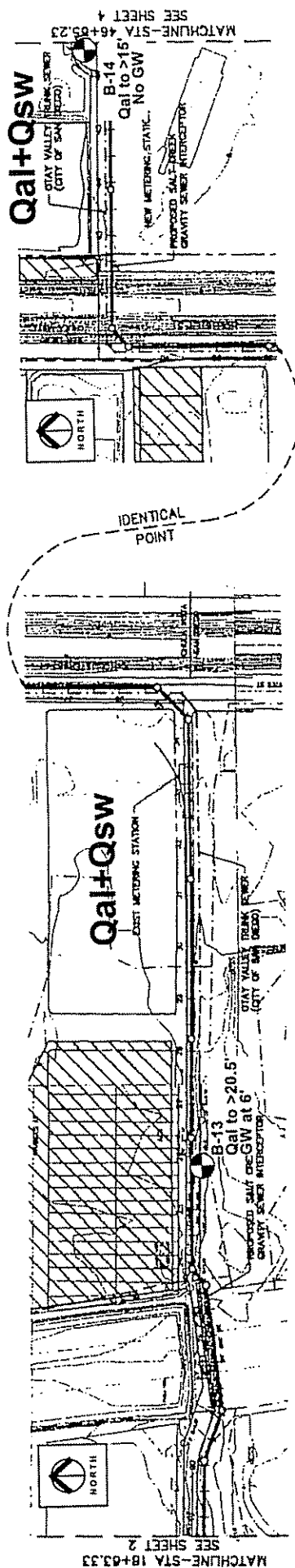
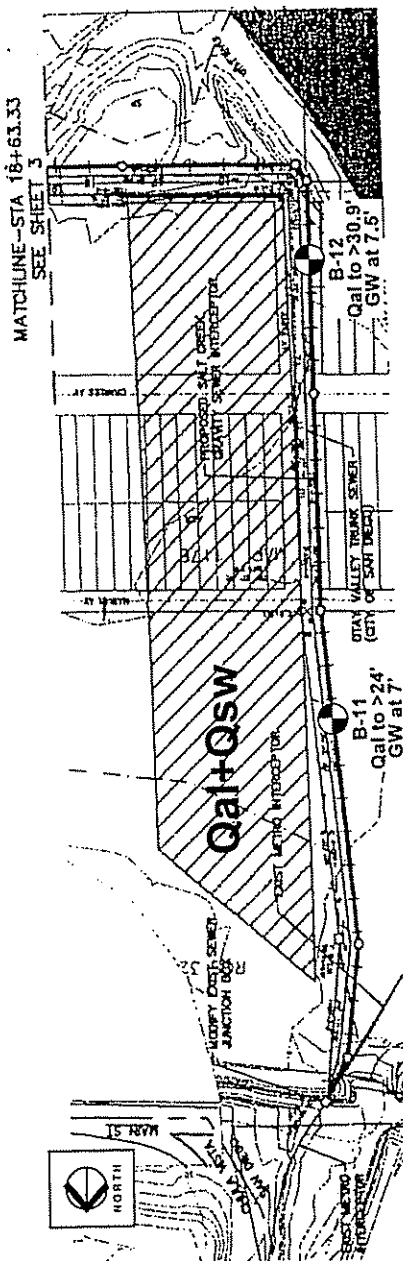
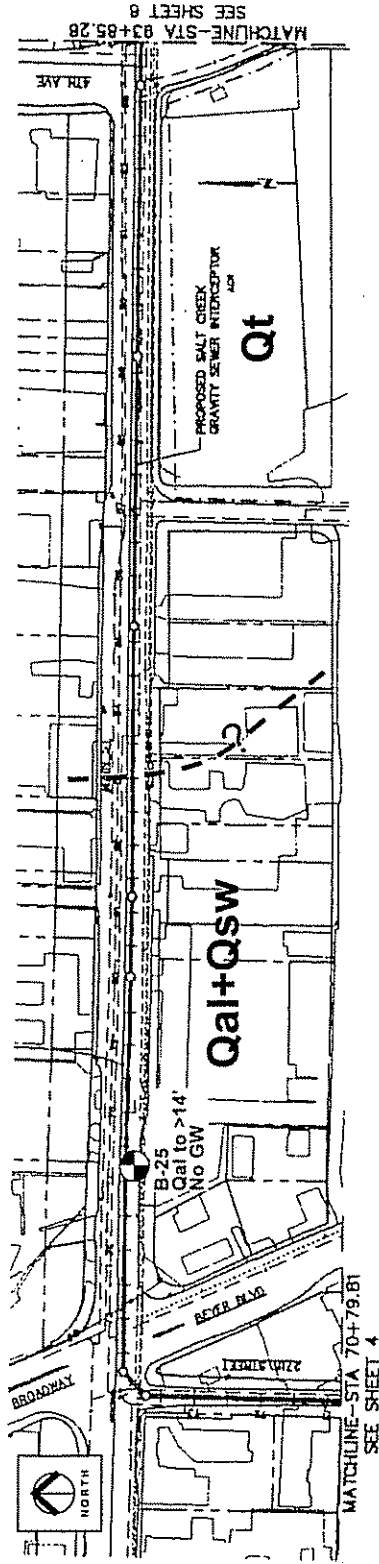
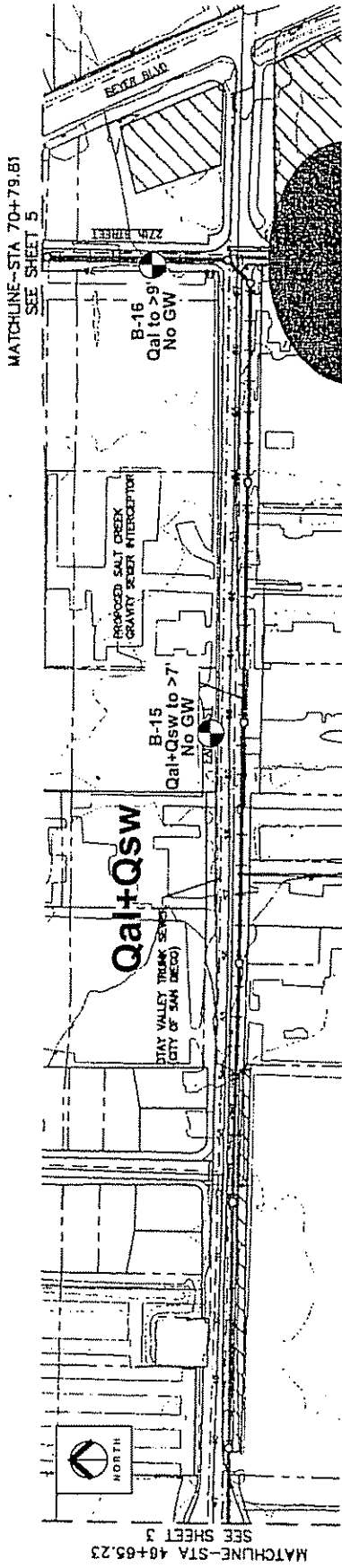


Figure No. 2



BORING LOCATION MAP

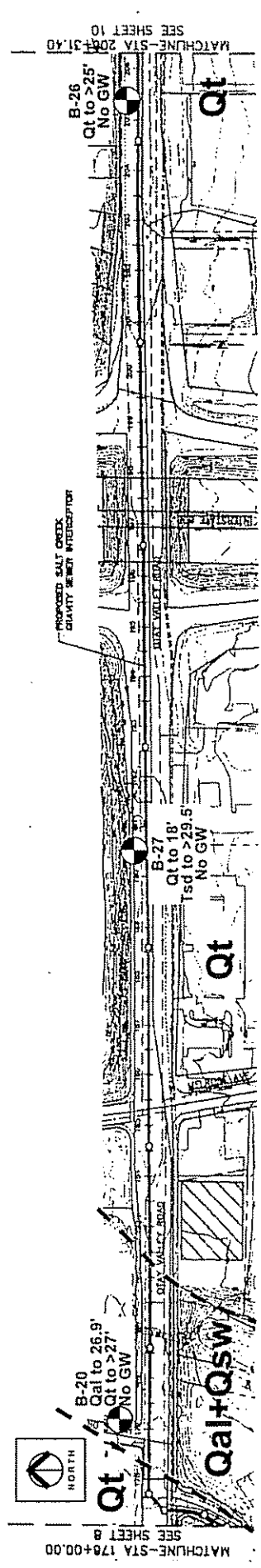
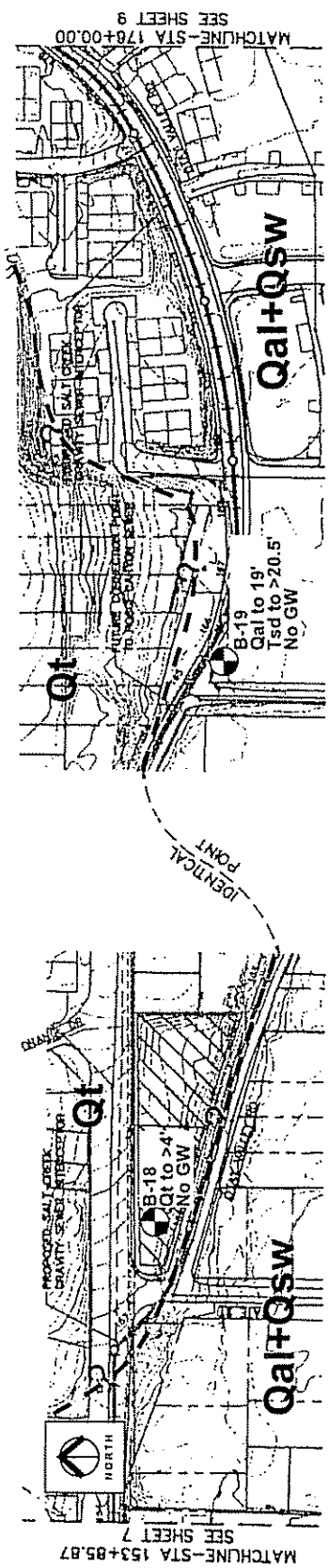
Dudek and Associates
 Salt Creek Gravity Sewer Interceptor
 Station 46+65.23 to 93+85.26
 Chula Vista, California

Project No. 040129-001
 Scale Not to Scale
 Engr./Geol. SAC/MRS
 Drafted By KAM
 Date October 2000

Leighton and Associates, Inc. Figure No. 3

See Figure No. 2 for Legend.

NOT TO SCALE

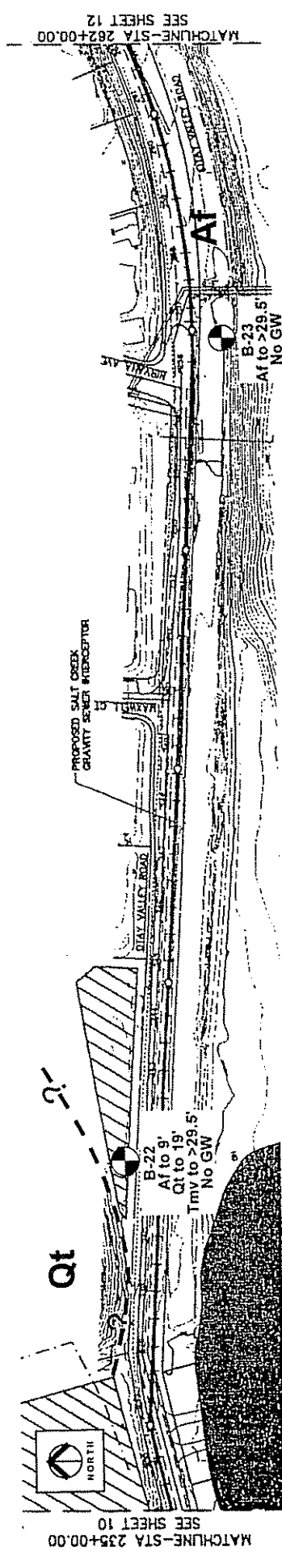
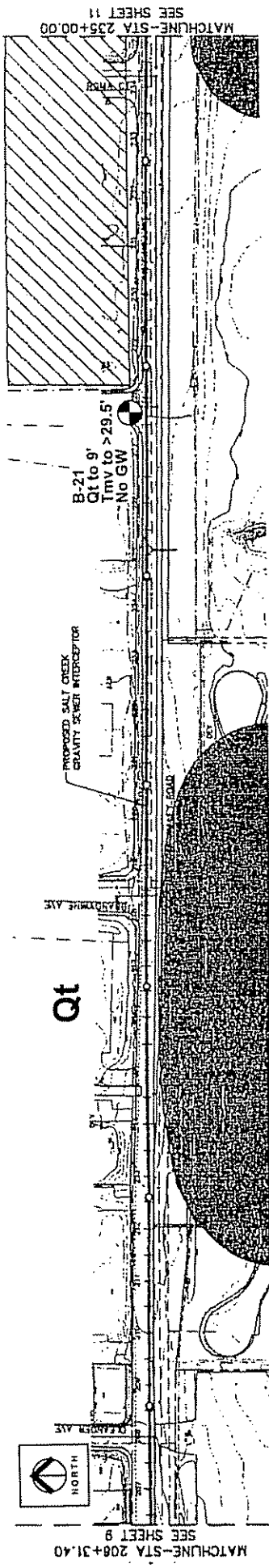


BORING LOCATION MAP Dudek and Associates Salt Creek Gravity Sewer Interceptor Station 153+85.87 to 206+31.40 Chula Vista, California

Project No.	040129-001
Scale	Not to scale
Engr./Geol.	SAC/MRS
Drafted By	KAM
Date	October 2000
Leighton and Associates, Inc. Figure No. 5	

See Figure No. 2 for Legend.

NOT TO SCALE



BORING LOCATION MAP
 Dudek and Associates
 Salt Creek Gravity Sewer Interceptor
 Station 208+31.40 to 262+00.00
 Chula Vista, California

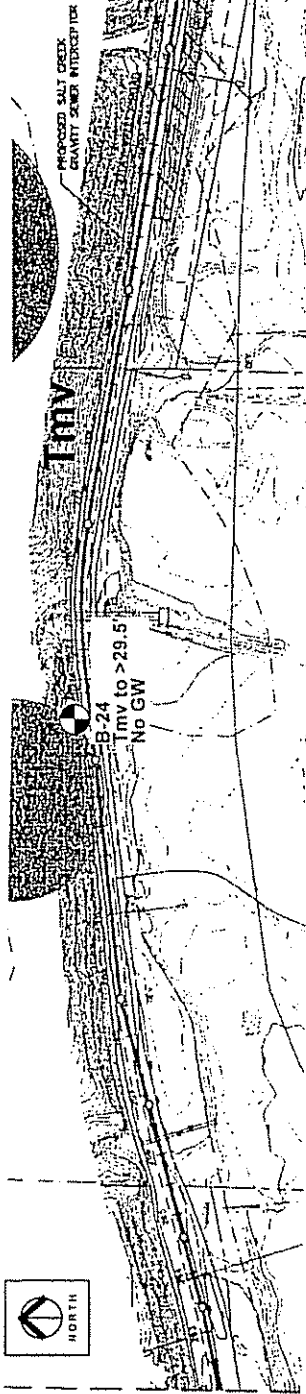
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Engr./Geol.	SAC/MRS
Drafted By	KAM
Date	October 2000
Leighton and Associates, Inc.	
Figure No. 6	

NOT TO SCALE

See Figure No. 2 for Legend.



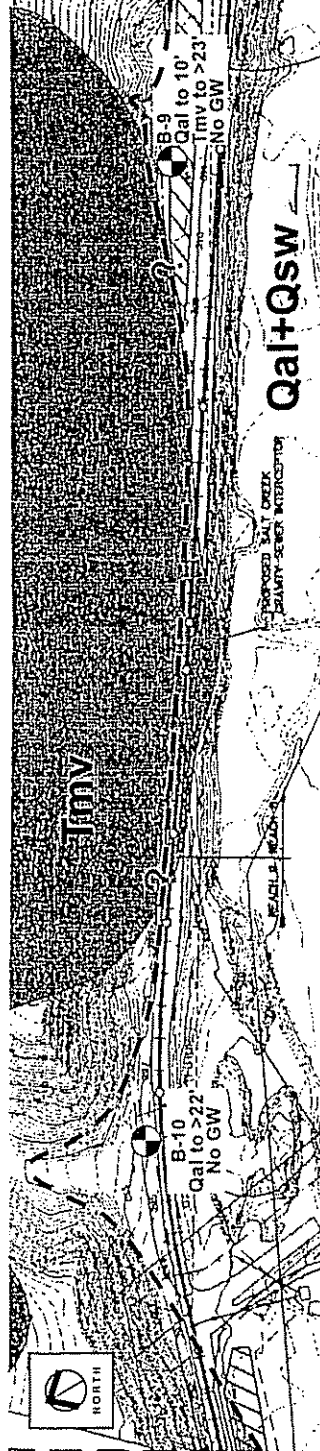
MATCHLINE-STA 262+00.00
SEE SHEET 11



MATCHLINE-STA 281+00.00
SEE SHEET 13



MATCHLINE-STA 281+00.00
SEE SHEET 12



MATCHLINE-STA 319+50.00
SEE SHEET 14

BORING LOCATION MAP

Dudek and Associates
Salt Creek Gravity Sewer Interceptor
Station 262+00.00 to 319+50.00
Chula Vista, California

Project No.	040129-001
Scale	Not to scale
Engr./Geol.	SAC/MRS
Drafted By	KAM
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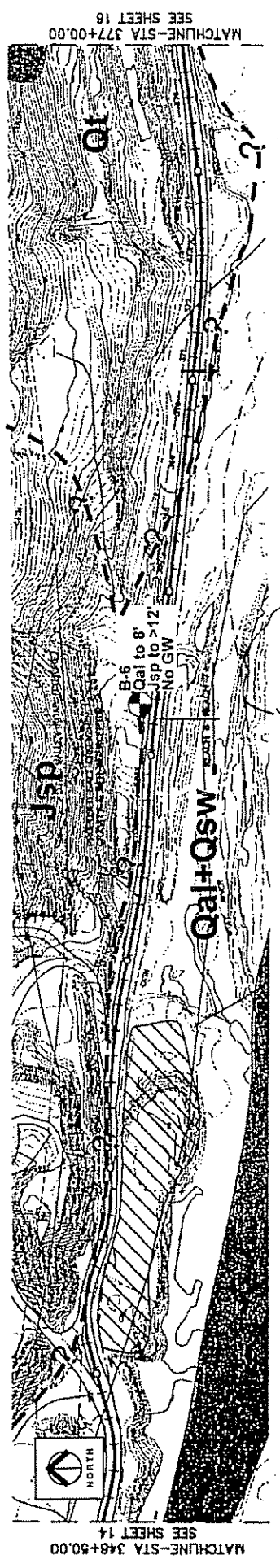
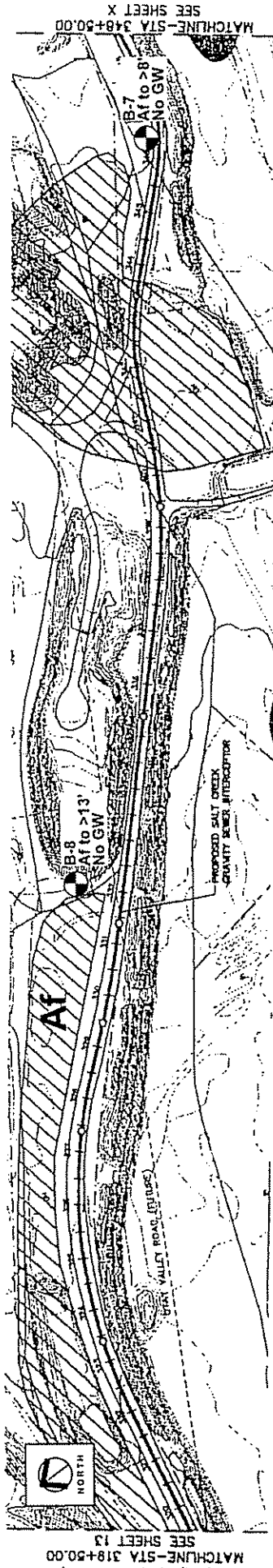
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Figure No. 7

See Figure No. 2 for Legend.

NOT TO SCALE





BORING LOCATION MAP

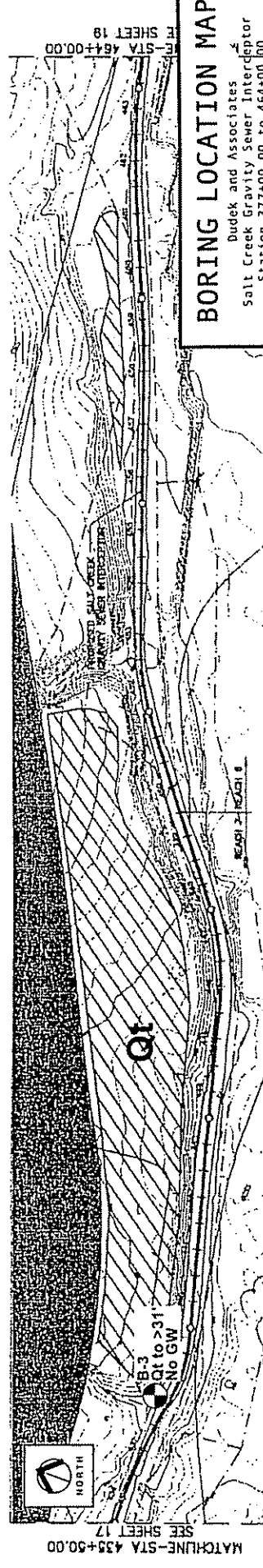
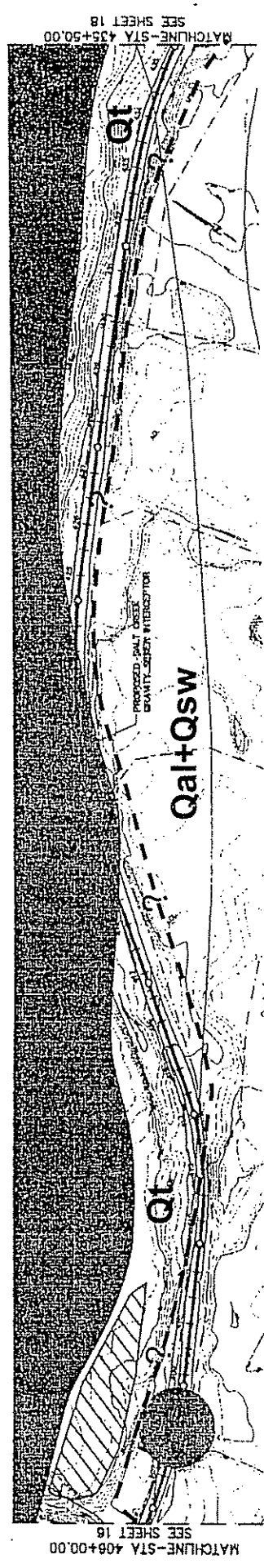
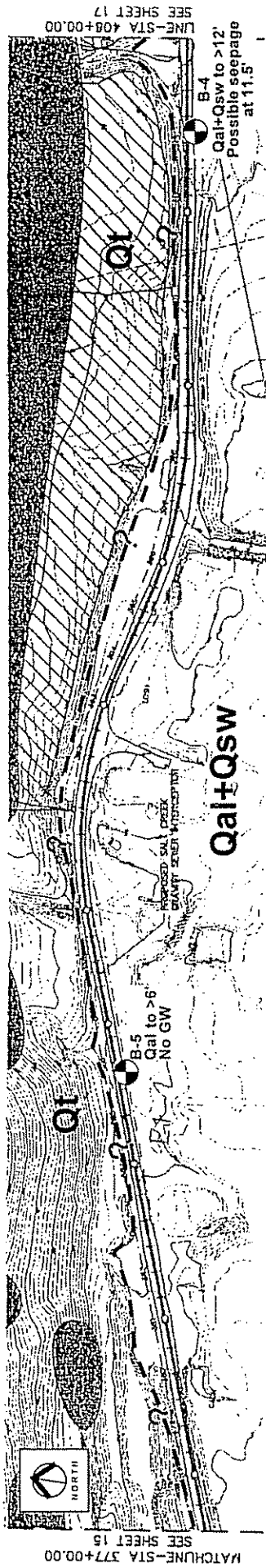
Dudek and Associates
Salt Creek Gravity Sewer Interceptor
Station 319+50.00 to 377+00.00
Chula Vista, California

Project No.	040129-001
Scale	Not to scale
Engr./Geol.	SAC/MRS
Drafted By	KAM
Date	October 2000

Leighton and Associates, Inc. Figure No. 8

See Figure No. 2 for Legend.

NOT TO SCALE



BORING LOCATION MAP

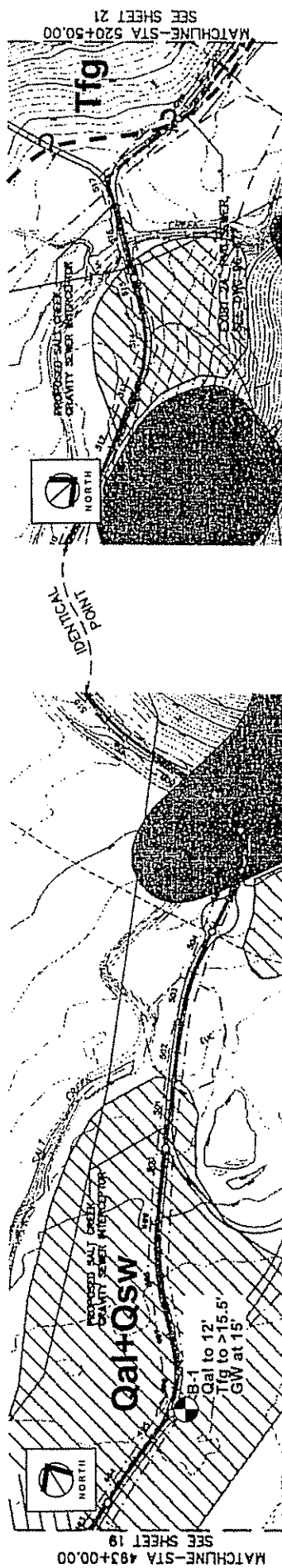
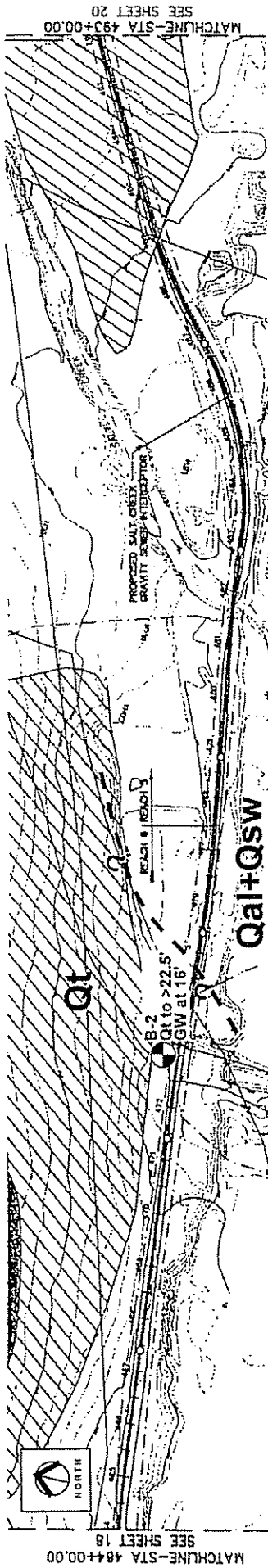
Dudek and Associates
Salt Creek Gravity Sewer Interceptor
Station 377+00.00 to 464+00.00
Chula Vista, California

NOT TO SCALE

Project No.	040129-001
Scale	Not to scale
Engr./Geol.	SAC/MRS
Drafted By	KAM
Date	October 2000
Leighton and Associates, Inc.	

Figure No. 9

See Figure No. 2 for Legend.



BORING LOCATION MAP

Dudek and Associates
Salt Creek Gravity Sewer Interceptor
Station 464+00.00 to 520+50.00
Chula Vista, California

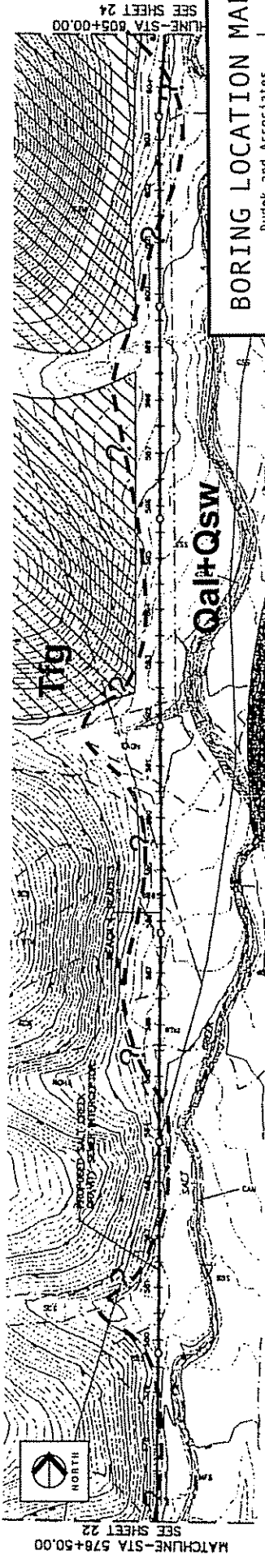
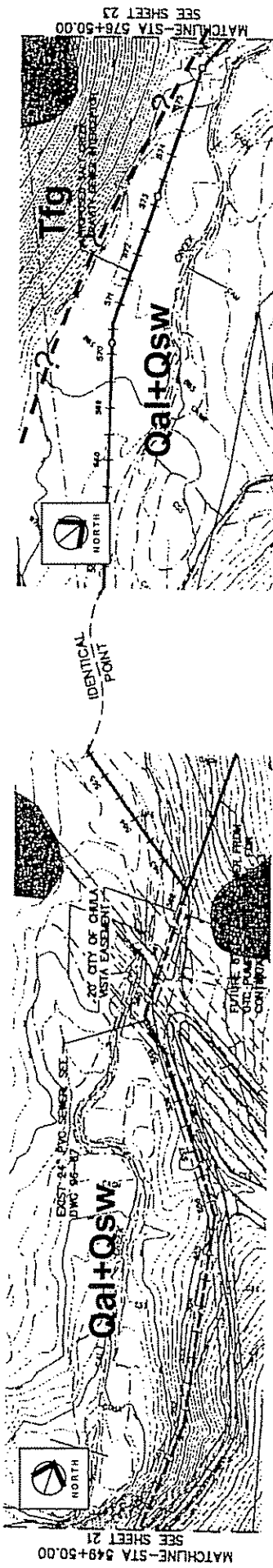
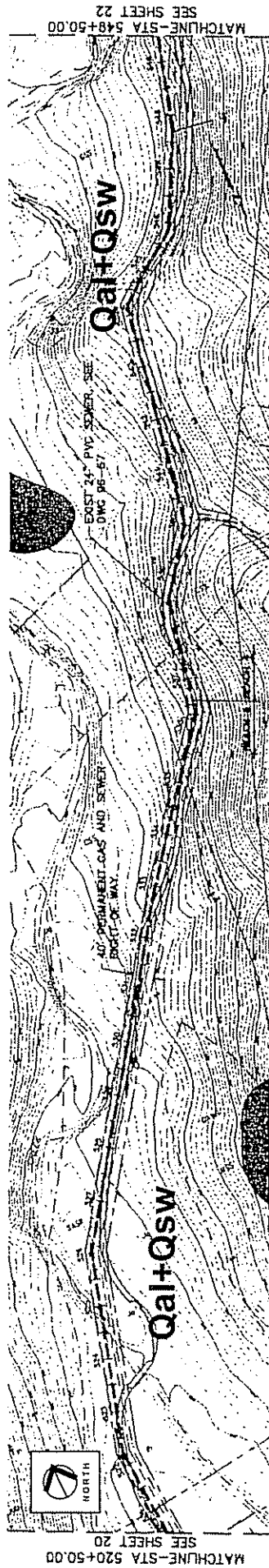
Project No. 040129-001
Scale Not to scale
Engr./Geol. SAC/MRS
Drafted By KAM
Date October 2000

Leighton and Associates, Inc.

Figure No. 1C

NOT TO SCALE

See Figure No. 2 for Legend.



BORING LOCATION MAP

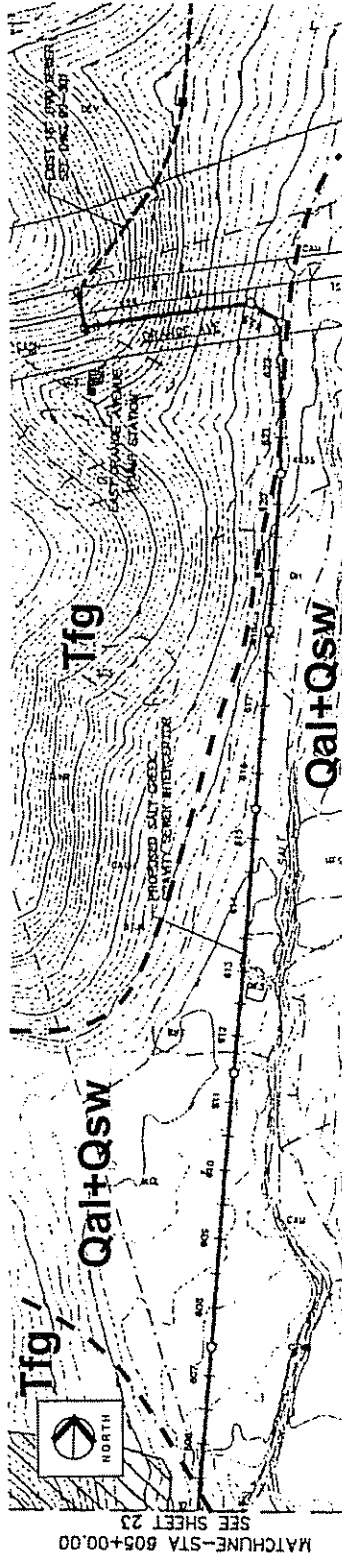
Dudek and Associates
Salt Creek Gravity Sewer Interceptor
Station 520+50.00 to 605+00.00
Chula Vista, California

Project No. 040129-001
Scale Not to scale
Engr./Geol. SAC/MRS
Drafted By KAM
Date October 2000

Leighton and Associates, Inc. Figure No. 11

See Figure No. 2 for Legend.

NOT TO SCALE



BORING LOCATION MAP.
 Dudek and Associates
 Salt Creek Gravity Sewer Interceptor
 Station 605+00.00 to 625+75.00
 Chula Vista, California

Project No.	040129-001
Scale	Not to scale
Engr./Geol.	SAC/MRS
Drafted By	KAM
Date	October 2000

Leighton and Associates, Inc. Figure No. 17

NOT TO SCALE

See Figure No. 2 for Legend.

APPENDIX A

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GEOTECHNICAL BORING LOG KEY

Date _____ Sheet 1 of 1
 Project KEY TO BORING LOG GRAPHICS Project No. _____
 Drilling Co. _____ Type of Rig _____
 Hole Diameter _____ Drive Weight _____ Drop _____
 Elevation Top of Hole +/- _____ ft. Ref. or Datum _____

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	
									Logged By _____	Sampled By _____
	0							CL	Inorganic clay of low to medium plasticity; gravelly clay; sandy clay; silty clay; etc.	
								CH	Inorganic clay or high plasticity; fat clay	
								OL-OH	Organic clay, silt or silty clay-clayey silt mixtures	
								ML	Inorganic silt; very fine sand; silty or clayey fine sand; clayey silt with low plasticity	
								MH	Inorganic silt; diatomaceous fine sandy or silty soils; elastic silt	
	5							CL-ML	Low plasticity clay to silt mixture	
								ML-SM	Sandy silt to silty sand mixture	
								CL-SC	Sandy clay to clayey sand mixture	
								SC-SM	Clayey sand to silty sand mixture	
								SW	Well graded sand; gravelly sand, little or no fines	
	10							SP	Poorly graded sand; gravelly sand, little or no fines	
								SM	Silty sand; poorly graded sand-silt mixture	
								SC	Clayey sand; poorly graded sand; clay mixture	
								GW	Well graded gravel; gravel-sand mixture, little or no fines	
								GP	Poorly graded gravel; gravel-sand mixture, little or no fines	
	15							GM	Silty gravel; gravel-sand-silt mixture	
								GC	Clayey gravel; gravel-sand-clay mixture	
									Sandstone	
									Siltstone	
									Claystone	
	20								Breccia (angular gravel and cobbles or matrix-support conglomerate)	
									Conglomerate (rounded gravel and cobble clast-supported)	
									Igneous granitic or granitic type rock	
									Metavolcanic or metamorphic rock	
									Artificial or man-made fill	
	25								Asphaltic concrete	
									Portland cement concrete	
	30									

GEOTECHNICAL BORING LOG B-1

Date 5-30-00 Sheet 1 of 1
 Project Dudek/Salt Creek Project No. 040129-001
 Drilling Co. San Diego Drilling Type of Rig Watson 3000
 Hole Diameter 30 in. Drive Weight 0-42' 4,121 pounds Drop 12 in
 Elevation Top of Hole +/- 248 ft. Ref. or Datum Mean Sea Level

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	
									Logged By	Sampled By
	0							ML	KTS	KTS
	245			Bag-1 @ 3'-5'				ML		
	5									
				1	2/14"	103.0	10.0			
	240									
	10									
				Bag-2 @ 12'-15'						
	235									
	15							SC		
	230									
	20									
	225									
	25									
	220									
	30									

Logged By KTS
 Sampled By KTS

TOPSOIL
 @ 0': Sandy SILT: dark gray-brown, dry, desiccated cracks, stiff; organics; few pebbles





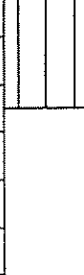
ALLUVIUM
 @ 2': Material change to clayey SILT dark brown, slightly moist to moist, moderately stiff; with pebbles
 @ 5': Material hard for approximately 2'
 @ 7': SILT: dark reddish brown, slightly moist to moist, soft to slightly stiff
 @ 12'-15': Clayey SAND with gravels: dark reddish brown, wet, loose; increasing gravels with depth

ANGLOMERATE DEPOSITS
 @ 14': Rock-rounded cobbles up to 10" in diameter
 @ 15': Water, refusal (large boulder) just below

Total Depth = 15.5 Feet
 Ground water encountered at 15 feet at time of drilling
 Backfilled with soil cuttings on 5/30/00

GEOTECHNICAL BORING LOG B-2

Date 5-30-00 Sheet 1 of 1
 Project Dudek/Salt Creek Project No. 040129-001
 Drilling Co. San Diego Drilling Type of Rig Watson 30⁰⁰
 Hole Diameter 30 in. Drive Weight 0-42' 4,121 pounds Drop in
 Elevation Top of Hole +/- 227 ft. Ref. or Datum Mean Sea Level

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	
									Logged By	KTS
									Sampled By	KTS
225	0							SC	<u>TOPSOIL</u> @ 0'-2': Clayey, dark gray-brown, dry, dense; coarse SAND with pebbles and organics	
220	5			Bag-1 @4'-5'				ML	<u>STREAM TERRACE DEPOSITS</u> @ 4'-5': SILT with gravel: reddish brown, damp, soft @ 7': Transition to light brown material @ 9': Coarse sandy silt with pebbles: orange/white light brown, damp, dense; iron-oxidized stained	
215	10			1	3/12"					
210	15			2	3/12"	111.6	15.8		@ 16': Ground water encountered @ 17': Coarse sandy SILT with pebbles: light reddish brown, wet, dense; iron-oxide stained, pebbles to 2"+ in tip	
205	20			3	4/12"				@ 21': Lost sample, same as at 17'	
200	25								Total Depth = 22.5 Feet Ground water encountered at 16 feet at time of drilling Backfilled with soil cuttings on 5/30/00	
195	30									

GEOTECHNICAL BORING LOG B-3

Date 5-30-00 Sheet 1 of 2
 Project Dudek/Salt Creek Project No. 040129-001
 Drilling Co. San Diego Drilling Type of Rig Watson 3000
 Hole Diameter 30 in. Drive Weight 0-42' 4,121 pounds Drop 12 in
 Elevation Top of Hole +/- 216 ft. Ref. or Datum Mean Sea Level

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	
									Logged By	AXT
									Sampled By	AXT
215	0							SM	<u>STREAM TERRACE DEPOSITS</u>	
									@ 0': Silty fine- to coarse-grained SAND with gravel and cobbles, dry; friable sand 6" to 8" subrounded cobbles	
									@ 4': Same as previous, with blocky silty CLAY: light reddish to greenish brown	
210	5			1	2/12"	83.8	33.4	CL	@ 5': Silty CLAY: light orange to rose, moist, stiff; few fine to medium gravels, charcoal fragments	
205	10			2	4/12"			SM/SC	@ 10': Silty fine to medium SAND: orange, moist, medium dense; slightly clayey with gravels, slightly weathered	
200	15			3	5/12"			SM	@ 15': Silty fine to medium SAND: light brown, moist, medium dense; fine gravels	
195	20			4	5/12"	117.2	14.2		@ 20': Same as previous	
190	25			Bag-1 @ 25'-30'						
	30									

GEOTECHNICAL BORING LOG B-3

Date 5-30-00 Sheet 2 of 2
 Project Dudek/Salt Creek Project No. 040129-001
 Drilling Co. San Diego Drilling Type of Rig Watson 3000
 Hole Diameter 30 in. Drive Weight 0-42' 4,121 pounds Drop in
 Elevation Top of Hole +/- 216 ft. Ref. or Datum Mean Sea Level

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	
									Logged By	AXT
									Sampled By	AXT
185	30			5	5/12"	107.1	19.2	ML	@ 30': Sandy clayey SILT: rose, moist, hard; charcoal visible	
									Total Depth = 31 Feet No ground water encountered at time of drilling Backfilled with soil cuttings on 5/30/00	
180	35									
175	40									
170	45									
165	50									
160	55									
155										
150										
145										
140										
135										
130										
125										
120										
115										
110										
105										
100										
95										
90										
85										
80										
75										
70										
65										
60										

GEOTECHNICAL BORING LOG B-4

Date 5-30-00

Sheet 1 of 1

Project Dudek/Salt Creek

Project No. 040129-001

Drilling Co. San Diego Drilling

Type of Rig Watson 3000

Hole Diameter 30 in. Drive Weight 0-42' 4,121 pounds Drop 12 in

Elevation Top of Hole +/- 198 ft. Ref. or Datum Mean Sea Level

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	
									Logged By	Sampled By
								SM	AXT	AXT
	0									<u>ALLUVIUM</u> @ 0': Silty fine-to coarse-grained SAND with gravel: brownish gray, dry; some 6" to 10" cobbles; friable sand
195										
	5									
190										@ 8': Same as previous, sands caving at bottom of hole
	10			Bag-1 @ 10'-12'						
										@ 11.5': Possible ground water seepage @ 12': Drilling ceased due to caving sands Total Depth = 12 Feet Possible ground water seepage encountered at 11.5 feet at time of drilling Backfilled with soil cuttings on 5/30/00
185										
	15									
180										
	20									
175										
	25									
170										
	30									

GEOTECHNICAL BORING LOG B-5

Date 5-30-00

Sheet 1 of 1

Project Dudek/Salt Creek

Project No. 040129-001

Drilling Co. San Diego Drilling

Type of Rig Watson 300ⁿ

Hole Diameter 30 in. Drive Weight 0-42' 4,121 pounds

Drop 1 a

Elevation Top of Hole +/- 183 ft. Ref. or Datum Mean Sea Level

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	
									Logged By	AXT
									Sampled By	AXT
0								SM	<u>ALLUVIUM</u> @ 0': Silty fine- to coarse-grained SAND with gravel, brown, dry; friable	
180										
5				Bag-1 @3'-6'						
									Practical refusal on boulder at 6'	
175									Total Depth = 6 Feet	
									No ground water encountered at time of drilling	
10									Backfilled with soil cuttings on 5/30/00	
170										
15										
165										
20										
160										
25										
155										
30										

GEOTECHNICAL BORING LOG B-6

Date 5-30-00

Project	Dudek/Salt Creek
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Drilling Co. **San Diego Drilling**

Hole Diameter	30 in.	Drive Weight	0-42' 4,121 pounds	Drop	12 in
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Elevation Top of Hole	+/- 166	ft.	Ref. or Datum	Mean Sea Level
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[illegible]

Sheet 1 of 1

Project No. 040129-001

Type of Rig Watson 3000

0-42' 4,121 pounds Drop 12 in

Mean Sea Level

								GEOTECHNICAL DESCRIPTION	
Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	Logged By _____ AXT Sampled By _____ AXT
165	0							SM/GM	<u>ALLUVIUM</u> @ 0': Silty fine to medium SAND with gravels and cobbles: light brown, dry; 4"-6" subrounded to subangular cobbles
160	5								
155	10		Bag-1 @ 10'-12'					SM/SC	<u>SANTIAGO PEAK VOLCANICS</u> @ 10': Clayey medium to coarse SAND with gravels and cobbles: gray-brown, moist; subangular to angular gravels and cobbles, volcanics throughout, slightly weathered to weathered Practical refusal on volcanics at 12' Total Depth = 12 Feet No ground water at time of drilling Backfilled with soil cuttings on 5/30/00
150	15								
145	20								
140	25								
	30								

GEOTECHNICAL BORING LOG B-7

Date 5-31-00 Sheet 1 of 1
 Project Dudek/Salt Creek Project No. 040129-001
 Drilling Co. San Diego Drilling Type of Rig Watson 3000
 Hole Diameter 30 in. Drive Weight 0-42' 4,121 pounds Drop ir
 Elevation Top of Hole +/- 170 ft. Ref. or Datum Mean Sea Level

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	
									Logged By	GJM
									Sampled By	GJM
170	0							SM	<u>ARTIFICIAL FILL</u> @ 0': Silty fine to medium SAND with gravel and clay: brown, dry to moist; some rounded cobbles; concrete in cuttings	
165	5			Bag-1 @6'-8'						
160	10								Practical refusal at 8 feet due to large boulder Total Depth = 8 Feet Practical refusal at 8 feet No ground water encountered at time of drilling Backfilled with soil cuttings on 5/31/00	
155	15									
150	20									
145	25									
140	30									

GEOTECHNICAL BORING LOG B-8

Date 5-31-00 Sheet 1 of 1
 Project Dudek/Salt Creek Project No. 040129-001
 Drilling Co. San Diego Drilling Type of Rig Watson 3000
 Hole Diameter 30 in. Drive Weight 0-42' 4,121 pounds Drop 12 in
 Elevation Top of Hole +/- 162 ft. Ref. or Datum Mean Sea Level

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	
									Logged By	Sampled By
0	0							SM/SC	GJM	GJM
160										
5										
155										
10										
150				Bag-1 @ 10'-12'						
15										
145										
20										
140										
25										
135										
30										

ARTIFICIAL FILL
 @ 0': Medium to coarse clayey SAND with gravel, brown, dry to moist, brown, some clay chunks; angular cobbles

Practical refusal at 13'
 Total Depth = 13 Feet
 Practical refusal at 13 feet due to hard rock
 No ground water encountered at time of drilling
 Backfilled with soil cuttings on 5/31/00

GEOTECHNICAL BORING LOG B-9

Date 5-31-00 Sheet 1 of 1
 Project Dudek/Salt Creek Project No. 040129-001
 Drilling Co. San Diego Drilling Type of Rig Watson 3000
 Hole Diameter 30 in. Drive Weight 0-42' 4,121 pounds Drop in
 Elevation Top of Hole +/- 152 ft. Ref. or Datum Mean Sea Level

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	
									Logged By	GJM
									Sampled By	GJM
0								SM	<u>ALLUVIUM/SLOPEWASH</u> @ 0': Medium to coarse clayey SAND: light brown to brown, dry to moist; minor gravel content, some rounded cobbles	
150				1	push	102.9	7.6			
5										
145										
10								SM	<u>MISSION VALLEY FORMATION</u> @ 10': Material change to silty fine to medium SAND: pale gray to light yellow dry to moist, dense	
140				2	6/12"				@ 12': Medium-grained SANDSTONE with gravel: gray, moist, dense; well cemented	
15									@ 15': Fine to medium silty SAND: light brown to rose, dry to moist, dense	
135									@ 20': Silty fine to medium SAND: greenish yellow to gray, moist, medium dense with interbedded thin layers of black sand	
20										
130				3 Bag-1 @ 22'-23'	1/12"	111.5	17.5			
25									Total Depth = 23 Feet Ground water encountered at 22 feet at time of drilling Backfilled with soil cuttings on 5/31/00	
125										
30										

GEOTECHNICAL BORING LOG B-10

Date 5-31-00 Sheet 1 of 1
 Project Dudek/Salt Creek Project No. 040129-001
 Drilling Co. San Diego Drilling Type of Rig Watson 3000
 Hole Diameter 30 in. Drive Weight 0-42' 4,121 pounds Drop 12 in
 Elevation Top of Hole +/- 144 ft. Ref. or Datum Mean Sea Level

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
									Logged By <u>GJM</u> Sampled By <u>GJM</u>
140	0							SM/SC	<u>ALLUVIUM</u> @ 0': Silty fine to medium clayey SAND, brown to reddish brown, moist
135	5								
130	10			Bag-1 @8'-10'				CL	@ 11': Sandy CLAY: reddish brown, moist, stiff
125	15								
120	20			Bag-2 @20'-22'				SM	@ 18': Silty medium to coarse SAND with gravel and subrounded cobbles: reddish gray, moist @ 20': Silty medium to coarse SAND: light yellowish gray, moist, dense; well cemented
115	25								Total Depth = 22 Feet No ground water encountered at time of drilling Backfilled with soil cuttings on 5/31/00
110	30								

GEOTECHNICAL BORING LOG B-11

Date 6-12-00 Sheet 1 of 1
 Project Dudek/Salt Creek Project No. 040129-001
 Drilling Co. Cal Pac Drilling Type of Rig B-61
 Hole Diameter 8 in. Drive Weight 140 pounds Drop in
 Elevation Top of Hole +/- 12 ft. Ref. or Datum Mean Sea Level

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	
									Logged By	AXT
									Sampled By	AXT
0								SM	<u>ALLUVIUM</u>	
10									@ 0': Silty fine to medium SAND: brown, dry; 1/4" to 1" subrounded to subangular gravels	
5				1	14	109.9	18.4		@ 5': Silty fine SAND: brown to gray brown, moist, loose; few fine subrounded gravels and rootlets, slightly oxidized	
5				2						
			Bag-1 @ 7'-10'							
10				3	7				@ 10': Silty fine to medium SAND: brownish gray, wet, loose	
0										
15				4	85/8"			SM/SC	@ 14': Gravels encountered upon drilling	
-5									@ 15': Clayey silty fine SAND with gravels: brown, wet, dense; 1/4" to 1" subangular gravels in sample	
20				5	90/9"			SM/GM	@ 20': Silty fine to coarse SAND with gravel: brown, wet, dense; 1/4" to 1/2" subangular to angular gravels	
-10									Difficult drilling to 24'	
25									Practical refusal at 24'	
-15									Total Depth = 24 Feet	
									Ground water encountered at 7 feet	
									Backfilled with soil cuttings on 6/12/00	
30										

GEOTECHNICAL BORING LOG B-12

Date 6-12-00

Project Dudek/Salt Creek

Drilling Co. Cal Pac Drilling

Hole Diameter 8 in. Drive Weight 140 pounds

Elevation Top of Hole +/- 15 ft. Ref. or Datum Mean Sea Level

Sheet 1 of 2

Project No. 040129-001

Type of Rig B-61

Drop 30 in

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	
									Logged By	Sampled By
									AXT	AXT
0								SM	ALLUVIUM	
									@ 0': Silty fine SAND: brown, dry, few fine gravels	
10	5			1	25	109.5	18.0			
				2		112.2	16.9		@ 5': Silty fine SAND: brown, moist, medium dense; slightly porous, slightly micaceous	
5	10			3	30	112.2	16.9		@ 10': Silty fine to medium SAND: brown, wet, medium dense; few 1/4" to 1/2" subrounded gravels	
0	15			4	9			SM/SC	@ 15': Silty fine SAND: brown, wet, loose; slightly clayey, slightly porous, few fine rootlets	
-5	20			5	28			SM	@ 19': Gravels encountered upon drilling	
									@ 20': Silty fine SAND: brownish gray, wet, medium dense; 1/4" to 1/2" subangular gravels	
-10	25			6	78			SM/GM	@ 25': Silty sandy GRAVEL to silty gravelly SAND: brown, wet, dense; Difficult drilling to 30'	
-15	30									

GEOTECHNICAL BORING LOG B-12

Date 6-12-00

Sheet 2 of 2

Project Dudek/Salt Creek


Project No. 040129-001

Drilling Co. Cal Pac Drilling

Type of Rig B-61

Hole Diameter 8 in. Drive Weight 140 pounds

Elevation Top of Hole +/- 15 ft. Ref. or Datum Mean Sea Level

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	
									Logged By	AXT
									Sampled By	AXT
	30			7	80/10"			SW	@ 30': Medium to coarse well-graded grained SAND: brown, wet, dense	
									Total Depth = 30.9 Feet Ground water encountered at 7.5 feet at time of drilling Backfilled with soil cuttings on 6/12/00	
-20	35									
-25	40									
-30	45									
-35	50									
-40	55									
-45	60									

GEOTECHNICAL BORING LOG B-13

Date 6-12-00

Sheet 1 of 1

Project Dudek/Salt Creek

Project No. 040129-001

Drilling Co. Cal Pac Drilling

Type of Rig B-61

Hole Diameter 8 in. Drive Weight 140 pounds

Drop 30 in

Elevation Top of Hole +/- 17 ft. Ref. or Datum Mean Sea Level

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	
									Logged By	AXT
									Sampled By	AXT
0	0							SM	<u>ALLUVIUM</u>	
15									@ 0': Silty fine SAND: light brown, dry	
5				1	18	102.5	10.2		@ 5': Silty fine SAND: brown, moist to wet, medium dense	
10				2	39			SW	@ 10': Medium- to coarse-grained well-graded SAND with gravel, brown, wet, dense; 1/4"-1/2" subrounded gravels	
10				3	36			SM/GM	@ 15': Silty gravelly SAND to sandy gravel: brown, wet, dense; 1/4" to 1" subrounded to subangular gravels	
5									@ 17': Large gravels encountered upon drilling	
15									Difficult drilling to 20'	
0									@ 20': Same as previous	
20				4	50/5"				Practical refusal on gravels at 20.5'	
-5									Total Depth = 20.5 Feet	
									Ground water encountered at 6 feet at time of drilling	
									Backfilled with soil cuttings on 6/12/00	
25										
-10										
30										

GEOTECHNICAL BORING LOG B-14

Date 6-12-00 Sheet 1 of 1
 Project Dudek/Salt Creek Project No. 040129-001
 Drilling Co. Cal Pac Drilling Type of Rig B-61
 Hole Diameter 8 in. Drive Weight 140 pounds Drop in
 Elevation Top of Hole +/- 26 ft. Ref. or Datum Mean Sea Level

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	
									Logged By	MDJ
									Sampled By	MDJ
25	0								@ 0-4": Asphalt Concrete @ 4"-8": Aggregate Base <u>SLOPE WASH</u> @ 2': Silty SAND: Red-brown, moist	
20	5			1	59	108.9	15.3	SM/GM	<u>ALLUVIUM</u> Cobble at 3.5' @ 5': Silty medium SAND with gravel: red-brown to orange-brown, moist, medium dense; cobble in ring sample	
15	10			2	50/6"			GM	@ 10': Silty GRAVEL with sand: light brown, damp, small sample recovered	
10	15								Practical refusal at 15' Total Depth = 15 Feet No ground water encountered at time of drilling Backfilled with soil cuttings on 6/12/00 Capped with 4" of Asphaltic Concrete	
5	20									
0	25									
30										

GEOTECHNICAL BORING LOG B-15

Date 6-12-00 Sheet 1 of 1
 Project Dudek/Salt Creek Project No. 040129-001
 Drilling Co. Cal Pac Drilling Type of Rig B-61
 Hole Diameter 8 in. Drive Weight 140 pounds Drop 30 in.
 Elevation Top of Hole +/- 33 ft. Ref. or Datum Mean Sea Level

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
0	0							SM/SC	<p>Logged By <u>MDJ</u></p> <p>Sampled By <u>MDJ</u></p> <p><u>SLOPE WASH/ALLUVIUM</u></p> <p>@ 2.5': Silty fine SAND with traces of CLAY: red-brown, moist, medium dense (per driller)</p> <p>@ 4.5': Very dense cobble no recovery</p> <p>Refusal at 7'</p> <p>Total Depth = 7 Feet No ground water encountered at time of drilling Backfilled with soil cuttings on 6/12/00 Capped with 4" of Asphaltic Concrete</p>
30	30			Bulk 1					
5	5			2	50/2"				
25	25								
10	10								
20	20								
15	15								
20	20								
10	10								
25	25								
5	5								
30	30								

GEOTECHNICAL BORING LOG B-16

Date 6-12-00

Sheet 1 of 1

Project Dudek/Salt Creek

Project No. 040129-001

Drilling Co. Cal Pac Drilling

Type of Rig Watson 3000

Hole Diameter 8 in. Drive Weight 140 pounds

Elevation Top of Hole +/- 38 ft. Ref. or Datum Mean Sea Level

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	
									Logged By	MDJ
									Sampled By	MDJ
	0							SM	ARTIFICIAL FILL @ 0': Silty SAND: Brown, moist	
35								SM/SC	ALLUVIUM @ 3': Cuttings red-brown silty SAND with trace of CLAY, moist	
5				1	58			ML-SC	@ 5': Clayey sandy SILT to clayey silty very fine SAND: brown to red-brown, moist, hard	
30									Refusal at 9'	
10									Total Depth = 9 Feet No ground water encountered at time of drilling Backfilled with soil cuttings on 6/12/00	
25										
15										
20										
20										
15										
25										
10										
30										

GEOTECHNICAL BORING LOG B-17

Date 6-12-00

Project Dudek/Salt Creek

Drilling Co. Cal Pac Drilling 140

Hole Diameter 8 in. Drive Weight 140 pounds

Elevation Top of Hole +/- 90 ft. Ref. or Datum Mean Sea Level

Sheet 1 of 1

Project No. 040129-001

Type of Rig Watson 3000

Drop 30 in

Elevation Top of Hole +/- 90 ft. Ref. or Datum Mean Sea Level

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
									Logged By _____ MDJ
									Sampled By _____ MDJ
90	0							SC	<u>STREAM TERRACE DEPOSITS</u>
				1	86	121.6	11.9		@ 2': Clayey very fine SAND: red-brown, damp, very dense
85	5			2	50			GM	@ 5': Silty gravel to silty SAND: red-brown, damp, dense; no recovery
									Refusal at 6 Feet Total Depth = 6 Feet No ground water encountered at time of drilling Backfilled with soil cuttings on 6/12/00
80	10								
75	15								
70	20								
65	25								
60	30								

GEOTECHNICAL BORING LOG B-18

Date 6-13-00

Sheet 1 of 1

Project Dudek/Salt Creek

Project No. 040129-001

Drilling Co. Cal Pac Drilling

Type of Rig Watson 3000

Hole Diameter 8 in. Drive Weight 140 pounds Drop 3 in.

Elevation Top of Hole +/- 123 ft. Ref. or Datum Mean Sea Level

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	
									Logged By	Sampled By
	0							SM	MDJ	MDJ
									ARTIFICIAL FILL @ 0': Silty SAND, brown, moist	
					50/6"			GM	STREAM TERRACE DEPOSITS @ 2': Very dense, no recovery, COBBLE with silty sand	
120									Practical refusal at 4'	
	5								Total Depth = 4 Feet No ground water encountered at time of drilling Backfilled with soil cuttings on 6/13/00	
115										
110										
	10									
105										
	20									
100										
	25									
95										
30										

GEOTECHNICAL BORING LOG B-19

Date 6-13-00

Sheet 1 of 1

Project Dudek/Salt Creek

Project No. 040129-001

Drilling Co. Cal Pac Drilling

Type of Rig B-61

Hole Diameter 8 in. Drive Weight 140 pounds Drop 30 in

Elevation Top of Hole +/- 108 ft. Ref. or Datum Mean Sea Level

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	
									Logged By	Sampled By
									<u>MDJ</u>	<u>MDJ</u>
0								SM-GM	<u>ALLUVIUM</u>	
105				1	42	117.9	4.8		@ 2': Silty fine SAND with gravel: red-brown, damp to moist, medium dense	
5				2	28			CL	@ 5': Silty CLAY with sand: brown, moist, very stiff; gravel rare	
100										
10				3	70	116.0	15.8		@ 10': Sandy CLAY: brown, moist, hard; gravel rare	
95										
15										
90										
20				4	24			CL-SM	<u>SAN DIEGO FORMATION</u>	
									@ 19': Sandy CLAY to silty fine SANDSTONE: brown to yellow-brown, moist, stiff to medium dense; contact within sample	
									Total Depth = 20.5 Feet	
									No ground water encountered at time of drilling	
									Backfilled with soil cuttings on 6/13/00	
85										
25										
80										
30										

GEOTECHNICAL BORING LOG B-20

Date 6-13-00

Sheet 1 of 1

Project Dudek/Salt Creek

Project No. 040129-001

Drilling Co. Cal Pac Drilling

Type of Rig MDJ

Hole Diameter 8 in. Drive Weight 140 pounds

Drop 3

Elevation Top of Hole +/- 130 ft. Ref. or Datum Mean Sea Level

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	
									Logged By	MDJ
									Sampled By	MDJ
	0								@ 0-4": Asphalt Concrete @ 4": Aggregate Base <u>ARTIFICIAL FILL</u> @ 1.5': Silty clayey SAND: yellow-brown, moist, medium dense	
								SM/SC	<u>ALLUVIUM</u>	
125	5			1	42	115.1	10.2	SM	@ 5': Silty fine SAND: brown, moist, medium dense; traces of clay	
120	10			2	23				@ 10': Silty fine SAND: brown to light brown, damp to moist, medium dense	
115	15			3	77				@ 15': Silty fine SAND: brown, moist, dense; organics present	
110	20			4	56			SC	@ 20': Clayey silty fine SAND: brown, moist, very dense	
105	25			Bulk 5						
100	30								<u>STREAM TERRACE DEPOSITS</u> Dense cobble layer at 27' Total Depth = 27 Feet No ground water encountered at time of drilling Backfilled with soil cuttings on 6/13/00 Refusal at 28'/Capped with 6" of Asphaltic Concrete	

GEOTECHNICAL BORING LOG B-21

Date 6-13-00 Sheet 1 of 2
 Project Dudek/Salt Creek Project No. 040129-001
 Drilling Co. Cal Pac Drilling Type of Rig B-61
 Hole Diameter 8 in. Drive Weight 140 pounds Drop 30 in
 Elevation Top of Hole +/- 133 ft. Ref. or Datum Mean Sea Level

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	
									Logged By	MDJ
									Sampled By	MDJ
0	0								@ 0-4": Asphalt Concrete	
									@ 4": Aggregate Base	
									<u>STREAM TERRACE DEPOSITS</u>	
130				1	46	119.0	13.0	SC	@ 2': Clayey fine to coarse SAND: brown to red-brown; moist, medium dense; rare gravel	
5				2	28				@ 5': Clayey fine SAND: red-brown; moist, medium dense	
125										
10				3	77		17.9	SM	<u>MISSION VALLEY FORMATION</u>	
									@ 10': Silty fine SANDSTONE: gray to gray-brown, damp to moist, very dense; calcium carbonate	
120										
15				Bulk 4					@ 14': Collected bulk sample, same as 10'	
				5	86				@ 15': Silty fine SANDSTONE: gray to orange-brown, damp, very dense; iron-stained bedding	
115										
20				6	86	98.6	18.5		@ 20': Silty fine SANDSTONE: gray to orange-brown, damp, very dense; iron-stained bedding and iron concretions	
110										
25										
105					80			SC	@ 28': Clayey fine SANDSTONE, gray brown, damp, very dense	
30										

GEOTECHNICAL BORING LOG B-21

Date 6-13-00

Sheet 2 of 2

Project Dudek/Salt Creek

Project No. 040129-001

Drilling Co. Cal Pac Drilling

Type of Rig B-61

Hole Diameter 8 in. Drive Weight 140 pounds

Drop 5 ft.

Elevation Top of Hole +/- 133 ft. Ref. or Datum Mean Sea Level

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
	30								Logged By <u>MDJ</u> Sampled By <u>MDJ</u>
	100								Total Depth = 29.5 Feet No ground water encountered at time of drilling Backfilled with soil cuttings on 6/13/00 Capped with 4" of Asphaltic Concrete
	35								
	95								
	40								
	90								
	45								
	85								
	50								
	80								
	55								
	75								
	60								

GEOTECHNICAL BORING LOG B-22

Date 6-13-00 Sheet 1 of 2
 Project Dudek/Salt Creek Project No. 040129-001
 Drilling Co. Cal Pac Drilling Type of Rig B-61
 Hole Diameter 8 in. Drive Weight 140 pounds Drop 30 in
 Elevation Top of Hole +/- 142 ft. Ref. or Datum Mean Sea Level

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
									Logged By <u>MDJ</u> Sampled By <u>MDJ</u>
0								SC	<u>ARTIFICIAL FILL</u>
140				1	73	109.1	10.0		@ 2': Clayey fine SAND with gravel: brown, damp to moist, dense; gravel rare
5				2	28			SC/CL	@ 5': Clayey fine SAND to sandy CLAY: damp to moist, medium stiff; dry sandy chunks with thin clay
135									
10				3	66	99.0	19.4	CL	<u>ALLUVIUM</u>
130									@ 10': Sandy CLAY: brown, moist, hard; calcium carbonate
15				4	27			SM/ML	@ 15': Fine sandy SILT to silty very fine SAND: brown, moist, very stiff
125									
20				5	80	114.1	15.5	SM	<u>MISSION VALLEY FORMATION</u>
120									@ 20': Silty fine SANDSTONE: light brown, damp to moist, very dense; friable
25									
115				6	50				@ 28': Silty very fine SANDSTONE: gray-brown, damp, very dense; slightly friable
30									

GEOTECHNICAL BORING LOG B-22

Date 6-13-00

Project Dudek/Salt Creek

Drilling Co. Cal Pac Drilling

Hole Diameter 8 in. Drive Weight 140 pounds

Elevation Top of Hole +/- 142 ft. Ref. or Datum Mean Sea Level

Sheet 2 of 2

Project No. 040129-001

Type of Rig B-61

Drop 3 in.

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
30									Total Depth = 29.5 Feet No ground water encountered at time of drilling Backfilled with soil cuttings on 6/13/00
110									
35									
105									
40									
100									
45									
95									
50									
90									
55									
85									
60									

Logged By MDJ

Sampled By MDJ

LEIGHTON & ASSOCIATES

GEOTECHNICAL BORING LOG B-23

Date 6-13-00 Sheet 1 of 2
 Project Dudek/Salt Creek Project No. 040129-001
 Drilling Co. Cal Pac Drilling Type of Rig B-61
 Hole Diameter 8 in. Drive Weight 140 pounds Drop 30 in.
 Elevation Top of Hole +/- 137 ft. Ref. or Datum Mean Sea Level

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	
									Logged By	Sampled By
									MDJ	MDJ
	0								@ 0-4": Asphalt Concrete @ 4": Aggregate Base <u>ARTIFICIAL FILL</u>	
135				1	86	125.3	7.1	SM	@ 2': Silty SAND with gravel: brown, damp, dense	
5				2	19			CL	@ 5': Silty CLAY with gravel: gray-brown, moist, very stiff	
130										
10				3	36			CL/SC	@ 10': Sandy CLAY to clayey SAND: gray-brown, moist, medium dense; gravel rare	
125										
15				4	33				@ 15': Sandy CLAY to clayey SAND: gray-brown, moist, dense; few gravel	
120										
20				5	44	102.4	10.5		@ 20': Sandy CLAY to clayey SAND: brown, moist, medium dense	
115										
25										
110				6	50			SC	@ 28': Clayey SAND: brown, moist, dense; few gravel	
30										

GEOTECHNICAL BORING LOG B-23

Date 6-13-00 Sheet 2 of 2
 Project Dudek/Salt Creek Project No. 040129-001
 Drilling Co. Cal Pac Drilling Type of Rig B-61
 Hole Diameter 8 in. Drive Weight 140 pounds Drop 3 ft.
 Elevation Top of Hole +/- 137 ft. Ref. or Datum Mean Sea Level

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	
									Logged By	MDJ
									Sampled By	MDJ
30									Total Depth = 29.5 Feet No ground water encountered at time of drilling Backfilled with soil cuttings on 6/13/00 Capped with 8" of Asphaltic Concrete	
105										
35										
100										
40										
95										
45										
90										
50										
85										
55										
80										
60										

GEOTECHNICAL BORING LOG B-24

Date 6-13-00 Sheet 1 of 1
 Project Dudek/Salt Creek Project No. 040129-001
 Drilling Co. Cal Pac Drilling Type of Rig B-61
 Hole Diameter 8 in. Drive Weight 140 pounds Drop 30 in
 Elevation Top of Hole +/- 136 ft. Ref. or Datum Mean Sea Level

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	
									Logged By	Sampled By
									MDJ	MDJ
									<u>MISSION VALLEY FORMATION</u>	
135	0			1	64	113.3	11.3	SM	@ 2': Silty SANDSTONE: light brown to green-brown, damp, dense	
	5			2	60				@ 5': Silty SANDSTONE: light brown, moist, very dense	
130										
	10			3	90				@ 10': Silty fine to medium SANDSTONE: Light brown, moist, very dense	
125										
	15									
120										
	20			4	82				@ 20': Silty medium SANDSTONE: light gray-brown, moist, very dense; micaceous	
115										
	25								Total Depth = 21.5 Feet No ground water encountered at time of drilling Backfilled with soil cuttings on 6/13/00	
110										
	30									

GEOTECHNICAL BORING LOG B-25

Date 6-14-00 Sheet 1 of 1
 Project Dudek/Salt Creek Project No. 040129-001
 Drilling Co. Cal Pac Drilling Type of Rig B-61
 Hole Diameter 8 in. Drive Weight 140 pounds Drop 1
 Elevation Top of Hole +/- 46 ft. Ref. or Datum Mean Sea Level

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	
									Logged By	MDJ
									Sampled By	MDJ
45	0								@ 0-12": Asphalt Concrete	
								SM	@ 12": Aggregate Base	
									<u>ALLUVIUM</u>	
40	5			1	19	105.6	10.1		@ 5': Silty medium SAND: red-brown, moist, medium dense; few gravel	
									@ 8': Cobbles encountered	
35	10			2	76			GW	@ 10': Sandy gravel: red-brown, damp to moist, very dense	
30	15								@ 14': Practical refusal	
									Total Depth = 14 Feet	
									No ground water encountered at time of drilling	
									Backfilled with soil cuttings on 6/13/00	
									Capped with 8" of Asphaltic Concrete	
25	20									
20	25									
15	30									
10	35									
5	40									
0	45									

GEOTECHNICAL BORING LOG B-26

Date 6-14-00 Sheet 1 of 1
 Project Dudek/Salt Creek Project No. 040129-001
 Drilling Co. Cal Pac Drilling Type of Rig B-61
 Hole Diameter 8 in. Drive Weight 140 pounds Drop 30 in.
 Elevation Top of Hole +/- 133 ft. Ref. or Datum Mean Sea Level

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	
									Logged By	MDJ
									Sampled By	MDJ
0									@ 0-6": Asphalt Concrete @ 6": Aggregate Base <u>STREAM TERRACE DEPOSITS</u>	
130								SM		
5				1	86	118.5	13.2		@ 5': Silty fine SAND: red-brown to orange-brown, moist, very dense	
125										
10				2	36				@ 10': Silty fine SAND: red-brown, moist, dense; gravel rare	
120										
15				3	63	108.7	3.2		@ 15': Silty medium SAND: light brown, damp to moist, dense; slightly porous	
115										
20				4	65			SM/SC	@ 20': Silty SAND to clayey sand; light brown to brown, damp, very dense	
110								SM	@ 22': Collected bulk	
				Bulk 5						
25									Refusal at 25' Total Depth = 25 Feet No ground water encountered at time of drilling Backfilled with soil cuttings on 6/14/00 Capped with 8" Asphaltic Concrete	
105										
30										

GEOTECHNICAL BORING LOG B-27

Date 6-14-00 Sheet 1 of 2
 Project Dudek/Salt Creek Project No. 040129-001
 Drilling Co. Cal Pac Drilling Type of Rig B-61
 Hole Diameter 8 in. Drive Weight 140 pounds Drop 1"
 Elevation Top of Hole +/- 132 ft. Ref. or Datum Mean Sea Level

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	
									Logged By	MDJ
									Sampled By	MDJ
	0								@ 0-8": Asphalt Concrete	
									8"-24": Aggregate Base	
130								SM	<u>ARTIFICIAL FILL</u>	
									@ 2': Silty SAND: red-brown, moist	
5				1	35	104.5	2.4	SM	<u>STREAM TERRACE DEPOSITS</u>	
									@ 5': Silty medium SAND: orange-brown, damp, medium dense	
125										
10				2	90			GM	@ 10': Sandy gravel: red-brown, damp to moist, very dense	
									@ 11.5' hit dense cobble	
120										
15				3	50/5"		5.4	SC-GC	@ 15': Clayey SAND with gravel: red-brown, moist, dense; cobble breaks into gravel	
115								SM	<u>SAN DIEGO FORMATION</u>	
									@ 20': Silty very fine SANDSTONE: yellow-brown, damp, very dense; problem with sampling pulley	
20				4	60					
110										
									@ 28': Silty very fine SANDSTONE: orange-brown, damp, very dense; iron stained	
105				5	80	93.9	18.4			
30										

GEOTECHNICAL BORING LOG B-27

Date 6-14-00

Sheet 2 of 2

Project Dudek/Salt Creek

Project No. 040129-001

Drilling Co. Cal Pac Drilling

Type of Rig B-61

Hole Diameter 8 in. Drive Weight 140 pounds Drop 30 in.

Elevation Top of Hole +/- 132 ft. Ref. or Datum Mean Sea Level

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
									Logged By <u>MDJ</u> Sampled By <u>MDJ</u>
30									Total Depth = 29.5 Feet No ground water encountered at time of drilling Backfilled with soil cuttings on 6/14/00 Capped with 8" Asphaltic Concrete
100									
35									
95									
40									
90									
45									
85									
50									
80									
55									
75									
60									

GEOTECHNICAL BORING LOG B-28

Date 6-14-00

Sheet 1 of 1

Project Dudek/Salt Creek

Project No. 040129-001

Drilling Co. Cal Pac Drilling

Type of Rig Watson 3000

Hole Diameter 8 in. Drive Weight 140 pounds

Elevation Top of Hole +/- 62 ft. Ref. or Datum Mean Sea Level

Elevation (feet)	Depth (feet)	Graphic Log	Notes	Sample No.	Blows Per Foot	Dry Density (pcf)	Moisture Content (%)	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION	
									Logged By	MDJ
									Sampled By	MDJ
	0								@ 0-6": Asphalt Concrete	
									@ 6": Aggregate Base	
									<u>ARTIFICIAL FILL</u>	
									@ 2': Sandy CLAY: red-brown, moist, hard; slightly porous	
60				1	48	112.7	15.4	CL		
	5			Bulk 2					<u>STREAM TERRACE DEPOSITS</u>	
				3	50/5"			GW	@ 4.5': Hit cobble (equipment broke down) bulk collected	
									@ 5': Sandy GRAVEL: brown, damp, dense	
55										
									Total Depth = 6.5 Feet	
									No ground water encountered at time of drilling	
									Backfilled on 6/14/00	
									Capped with 8" Asphaltic Concrete	
10										
50										
15										
45										
20										
40										
25										
35										
30										

APPENDIX C

Laboratory Testing Procedures and Test Results

Moisture and Density Determination Tests: Moisture content and dry density determinations were performed on relatively undisturbed samples obtained from the test borings. The results of these tests are presented in the boring logs. Where applicable, only moisture content was determined from "undisturbed" or disturbed samples.

Direct Shear Tests: Direct shear tests were performed on selected remolded and/or undisturbed samples which were soaked for a minimum of 24 hours under a surcharge equal to the applied normal force during testing. After transfer of the sample to the shear box, and reloading the sample, pore pressures set up in the sample due to the transfer were allowed to dissipate for a period of approximately 1 hour prior to application of shearing force. The samples were tested under various normal loads, a motor-driven, strain-controlled, direct-shear testing apparatus at a strain rate of 0.05 inches per minute. After a "peak" value of shear strength was observed or after a shear strain of 0.2 inches if no peak was observed, the motor was stopped and the sample was allowed to "relax" for approximately 15 minutes. The stress drop during the relaxation period was recorded. It is anticipated that, in a majority of samples tested, the 15 minutes relaxing of the sample is sufficient to allow dissipation of pore pressures that may have set up in the samples due to shearing. The drained peak strength was estimated by deducting the shear force reduction during the relaxation period from the peak shear values. The direct shear test results are presented below.

Sample Location and Depth	Sample Description	Friction Angle (degrees)	Apparent Cohesion (psf)
B-2, 9'	Orange to White and Light Brown Sandy Silt (Stream Terrace Deposits)	42	350
B-9, 12'	Gray Sandstone (Mission Valley Formation)	42	1000
B-11, 6'	Brown to Gray Brown Silty Sand (Alluvium)	33	200
B-16, 5'	Brown to Red-Brown Clayey Sandy Silt to Clayey Silty Sand (Alluvium)	39	600
B-20, 15'	Brown Silty Sand (Alluvium)	28	200
B-23, 10'	Sandy Clay to Clayey Sand (Artificial Fill)	36	250
B-24, 10'	Light Brown Silty Sand (Mission Valley Formation)	30	250

LEIGHTON AND ASSOCIATES, INC.

GENERAL EARTHWORK AND GRADING SPECIFICATIONS FOR ROUGH GRADING

1.0 General

- 1.1 Intent These General Earthwork and Grading Specifications are for the grading and earthwork shown on the approved grading plan(s) and/or indicated in the geotechnical report(s). These Specifications are a part of the recommendations contained in the geotechnical report(s). In case of conflict, the specific recommendations in the geotechnical report shall supersede these more general Specifications. Observations of the earthwork by the project Geotechnical Consultant during the course of grading may result in new or revised recommendations that could supersede these specifications or the recommendations in the geotechnical report(s).

- 1.2 The Geotechnical Consultant of Record: Prior to commencement of work, the owner shall employ the Geotechnical Consultant of Record (Geotechnical Consultant). The Geotechnical Consultants shall be responsible for reviewing the approved geotechnical report(s) and accepting the adequacy of the preliminary geotechnical findings, conclusions, and recommendations prior to the commencement of the grading.

Prior to commencement of grading, the Geotechnical Consultant shall review the "work plan" prepared by the Earthwork Contractor (Contractor) and schedule sufficient personnel to perform the appropriate level of observation, mapping, and compaction testing.

During the grading and earthwork operations, the Geotechnical Consultant shall observe, map, and document the subsurface exposures to verify the geotechnical design assumptions. If the observed conditions are found to be significantly different than the interpreted assumptions during the design phase, the Geotechnical Consultant shall inform the owner, recommend appropriate changes in design to accommodate the observed conditions, and notify the review agency where required. Subsurface areas to be geotechnically observed, mapped, elevations recorded, and/or tested include natural ground after it has been cleared for receiving fill but before fill is placed, bottoms of all "remedial removal" areas, all key bottoms, and benches made on sloping ground to receive fill.

The Geotechnical Consultant shall observe the moisture-conditioning and processing of the subgrade and fill materials and perform relative compaction testing of fill to determine the attained level of compaction. The Geotechnical Consultant shall provide the test results to the owner and the Contractor on a routine and frequent basis.

- 1.3 The Earthwork Contractor. The Earthwork Contractor (Contractor) shall be qualified, experienced, and knowledgeable in earthwork logistics, preparation and processing of ground to receive fill, moisture-conditioning and processing of fill, and compacting fill. The Contractor shall review and accept the plans, geotechnical report(s), and these Specifications prior to commencement of grading. The Contractor shall be solely responsible for performing the grading in accordance with the plans and specifications. The Contractor shall prepare and submit to the owner and the Geotechnical Consultant a work plan that indicates the sequence of earthwork grading, the number of "spreads" of work and the estimated quantities of daily earthwork contemplated for the site prior to commencement of grading. The Contractor shall inform the owner and the Geotechnical Consultant of changes in work schedules and updates to the work plan at least 24 hours in advance of such changes so that appropriate observations and tests can be planned and accomplished. The Contractor shall not assume that the Geotechnical Consultant is aware of all grading operations.

The Contractor shall have the sole responsibility to provide adequate equipment and methods to accomplish the earthwork in accordance with the applicable grading codes and agency ordinances, these Specifications, and the recommendations in the approved geotechnical report(s) and grading plan(s). If, in the opinion of the Geotechnical Consultant, unsatisfactory conditions, such as unsuitable soil, improper moisture condition, inadequate compaction, insufficient buttress key size, adverse weather, etc., are resulting in a quality of work less than required in these specifications, the Geotechnical Consultant shall reject the work and may recommend to the owner that construction be stopped until the conditions are rectified.

2.0 Preparation of Areas to be Filled

- 2.1 Clearing and Grubbing Vegetation, such as brush, grass, roots, and other deleterious material shall be sufficiently removed and properly disposed of in a method acceptable to the owner, governing agencies, and the Geotechnical Consultant.

The Geotechnical Consultant shall evaluate the extent of these removals depending on specific site conditions. Earth fill material shall not contain more than 1 percent of organic materials (by volume). No fill lift shall contain more than 5 percent of organic matter. Nesting of the organic materials shall not be allowed.

If potentially hazardous materials are encountered, the Contractor shall stop work in the affected area, and a hazardous material specialist shall be informed immediately for proper evaluation and handling of these materials prior to continuing to work in that area.

As presently defined by the State of California, most refined petroleum products (gasoline, diesel fuel, motor oil, grease, coolant, etc.) have chemical constituents that are considered to be hazardous waste. As such, the indiscriminate dumping or spillage of these fluids onto the ground may constitute a misdemeanor, punishable by fines and/or imprisonment, and shall not be allowed.

- 2.2 Processing Existing ground that has been declared satisfactory for support of fill by the Geotechnical Consultant shall be scarified to a minimum depth of 6 inches. Existing ground that is not satisfactory shall be overexcavated as specified in the following section. Scarification shall continue until soils are broken down and free of large clay lumps or clods and the working surface is reasonably uniform, flat, and free of uneven features that would inhibit uniform compaction.
- 2.3 Overexcavation In addition to removals and overexcavations recommended in the approved geotechnical report(s) and the grading plan, soft, loose, dry, saturated, spongy, organic-rich, highly fractured or otherwise unsuitable ground shall be overexcavated to competent ground as evaluated by the Geotechnical Consultant during grading.
- 2.4 Benching Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal to vertical units), the ground shall be stepped or benched. Please see the Standard Details for a graphic illustration. The lowest bench or key shall be a minimum of 15 feet wide and at least 2 feet deep, into competent material as evaluated by the Geotechnical Consultant. Other benches shall be excavated a minimum height of 4 feet into competent material or as otherwise recommended by the Geotechnical Consultant. Fill placed on ground sloping flatter than 5:1 shall also be benched or otherwise overexcavated to provide a flat subgrade for the fill.
- 2.5 Evaluation/Acceptance of Fill Areas All areas to receive fill, including removal and processed areas, key bottoms, and benches, shall be observed, mapped, elevations recorded, and/or tested prior to being accepted by the Geotechnical Consultant as suitable to receive fill. The Contractor shall obtain a written acceptance from the Geotechnical Consultant prior to fill placement. A licensed surveyor shall provide the survey control for determining elevations of processed areas, keys, and benches.

3.0 Fill Material

- 3.1 General Material to be used as fill shall be essentially free of organic matter and other deleterious substances evaluated and accepted by the Geotechnical Consultant prior to placement. Soils of poor quality, such as those with unacceptable gradation, high expansion potential, or low strength shall be placed in areas acceptable to the Geotechnical Consultant or mixed with other soils to achieve satisfactory fill material.
- 3.2 Oversize Oversize material defined as rock, or other irreducible material with a maximum dimension greater than 8 inches, shall not be buried or placed in fill unless location, materials, and placement methods are specifically accepted by the Geotechnical Consultant. Placement operations shall be such that nesting of oversized material does not occur and such that oversize material is completely surrounded by compacted or densified fill. Oversize material shall not be placed within 10 vertical feet of finish grade or within 2 feet of future utilities or underground construction.
- 3.3 Import If importing of fill material is required for grading, proposed import material shall meet the requirements of Section 3.1. The potential import source shall be given to the

Geotechnical Consultant at least 48 hours (2 working days) before importing begins so that its suitability can be determined and appropriate tests performed.

4.0 Fill Placement and Compaction

- 4.1 Fill Layers: Approved fill material shall be placed in areas prepared to receive fill (per Section 3.0) in near-horizontal layers not exceeding 8 inches in loose thickness. The Geotechnical Consultant may accept thicker layers if testing indicates the grading procedures can adequately compact the thicker layers. Each layer shall be spread evenly and mixed thoroughly to attain relative uniformity of material and moisture throughout.
- 4.2 Fill Moisture Conditioning: Fill soils shall be watered, dried back, blended, and/or mixed, as necessary to attain a relatively uniform moisture content at or slightly over optimum. Maximum density and optimum soil moisture content tests shall be performed in accordance with the American Society of Testing and Materials (ASTM Test Method D1557-91).
- 4.3 Compaction of Fill: After each layer has been moisture-conditioned, mixed, and evenly spread, it shall be uniformly compacted to not less than 90 percent of maximum dry density (ASTM Test Method D1557-91). Compaction equipment shall be adequately sized and be either specifically designed for soil compaction or of proven reliability to efficiently achieve the specified level of compaction with uniformity.
- 4.4 Compaction of Fill Slopes: In addition to normal compaction procedures specified above, compaction of slopes shall be accomplished by backrolling of slopes with sheepfoot rollers at increments of 3 to 4 feet in fill elevation, or by other methods producing satisfactory results acceptable to the Geotechnical Consultant. Upon completion of grading, relative compaction of the fill, out to the slope face, shall be at least 90 percent of maximum density per ASTM Test Method D1557-91.
- 4.5 Compaction Testing: Field tests for moisture content and relative compaction of the fill soils shall be performed by the Geotechnical Consultant. Location and frequency of tests shall be at the Consultant's discretion based on field conditions encountered. Compaction test locations will not necessarily be selected on a random basis. Test locations shall be selected to verify adequacy of compaction levels in areas that are judged to be prone to inadequate compaction (such as close to slope faces and at the fill/bedrock benches).
- 4.6 Frequency of Compaction Testing: Tests shall be taken at intervals not exceeding 2 feet in vertical rise and/or 1,000 cubic yards of compacted fill soils embankment. In addition, as a guideline, at least one test shall be taken on slope faces for each 5,000 square feet of slope face and/or each 10 feet of vertical height of slope. The Contractor shall assure that fill construction is such that the testing schedule can be accomplished by the Geotechnical Consultant. The Contractor shall stop or slow down the earthwork construction if these minimum standards are not met.

- 4.7 Compaction Test Locations: The Geotechnical Consultant shall document the approximate elevation and horizontal coordinates of each test location. The Contractor shall coordinate with the project surveyor to assure that sufficient grade stakes are established so that the Geotechnical Consultant can determine the test locations with sufficient accuracy. At a minimum, two grade stakes within a horizontal distance of 100 feet and vertically less than 5 feet apart from potential test locations shall be provided.

5.0 Subdrain Installation

Subdrain systems shall be installed in accordance with the approved geotechnical report(s), the grading plan, and the Standard Details. The Geotechnical Consultant may recommend additional subdrains and/or changes in subdrain extent, location, grade, or material depending on conditions encountered during grading. All subdrains shall be surveyed by a land surveyor/civil engineer for line and grade after installation and prior to burial. Sufficient time should be allowed by the Contractor for these surveys.

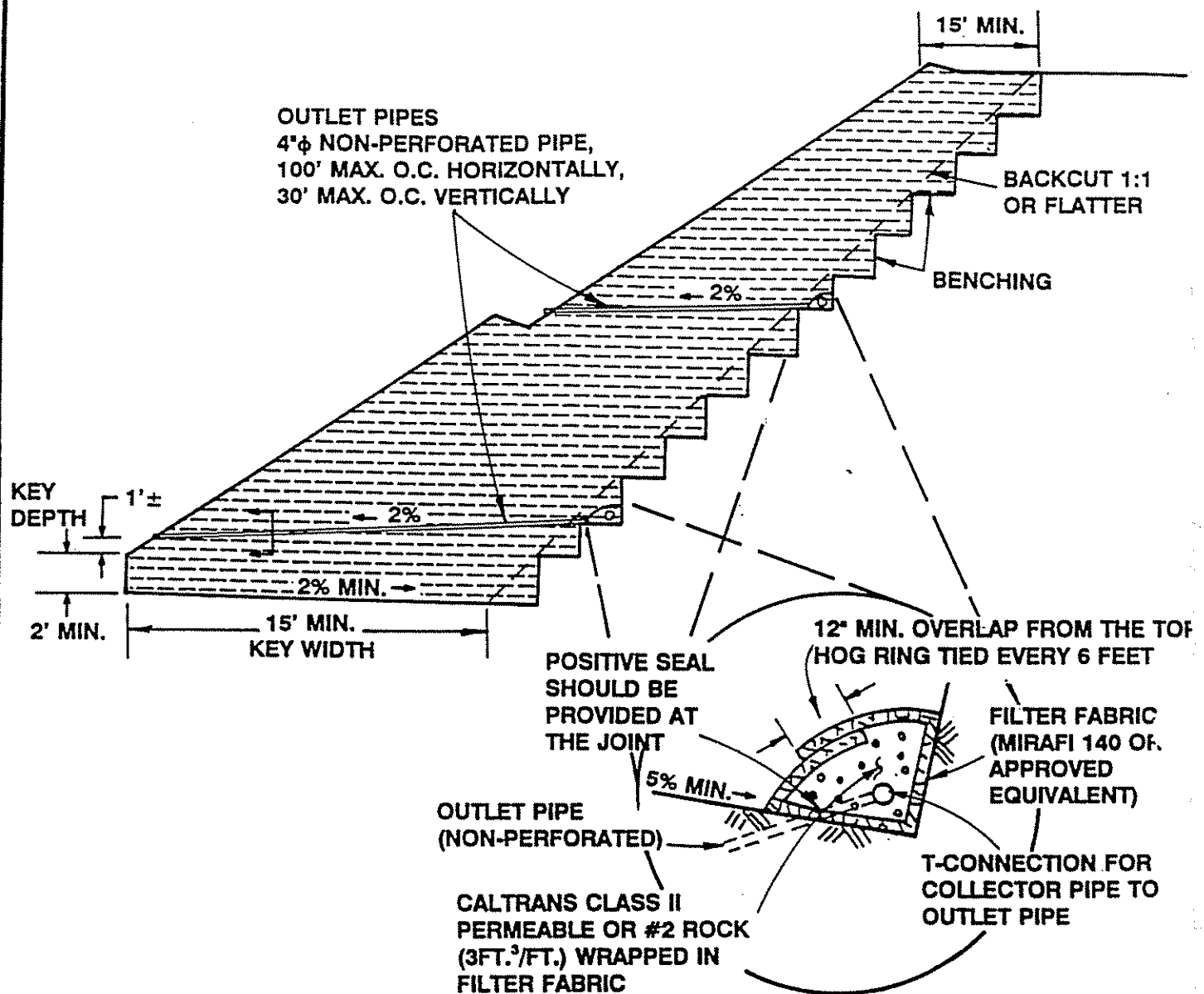
6.0 Excavation

Excavations, as well as over-excavation for remedial purposes, shall be evaluated by the Geotechnical Consultant during grading. Remedial removal depths shown on geotechnical plans are estimates only. The actual extent of removal shall be determined by the Geotechnical Consultant based on the field evaluation of exposed conditions during grading. Where fill-over-slopes are to be graded, the cut portion of the slope shall be made, evaluated, and accepted by the Geotechnical Consultant prior to placement of materials for construction of the fill portion of the slope, unless otherwise recommended by the Geotechnical Consultant.

7.0 Trench Backfills

- 7.1 The Contractor shall follow all OHSA and Cal/OSHA requirements for safety of trench excavations.
- 7.2 All bedding and backfill of utility trenches shall be done in accordance with the applicable provisions of Standard Specifications of Public Works Construction. Bedding material shall have a Sand Equivalent greater than 30 ($SE > 30$). The bedding shall be placed to 1 foot over the top of the conduit and densified by jetting. Backfill shall be placed and densified to a minimum of 90 percent of maximum from 1 foot above the top of the conduit to the surface.
- 7.3 The jetting of the bedding around the conduits shall be observed by the Geotechnical Consultant.
- 7.4 The Geotechnical Consultant shall test the trench backfill for relative compaction. At least one test should be made for every 300 feet of trench and 2 feet of fill.

- 7.5 Lift thickness of trench backfill shall not exceed those allowed in the Standard Specifications of Public Works Construction unless the Contractor can demonstrate to the Geotechnical Consultant that the fill lift can be compacted to the minimum relative compaction by his alternative equipment and method.



- **SUBDRAIN INSTALLATION** - Subdrain collector pipe shall be installed with perforations down or, unless otherwise designated by the geotechnical consultant. Outlet pipes shall be non-perforated pipe. The subdrain pipe shall have at least 8 perforations uniformly spaced per foot. Perforation shall be $\frac{1}{4}$ " to $\frac{1}{2}$ " if drilled holes are used. All subdrain pipes shall have a gradient at least 2% towards the outlet.
- **SUBDRAIN PIPE** - Subdrain pipe shall be ASTM D2751, SDR 23.5 or ASTM D1527, Schedule 40, or ASTM D3034, SDR 23.5, Schedule 40 Polyvinyl Chloride Plastic (PVC) pipe.
- All outlet pipe shall be placed in a trench no wider than twice the subdrain pipe. Pipe shall be in soil of $SE \geq 30$ jetted or flooded in place except for the outside 5 feet which shall be native soil backfill.

**BUTTRESS OR
REPLACEMENT FILL
SUBDRAINS**

**GENERAL EARTHWORK AND GRADING
SPECIFICATIONS
STANDARD DETAILS D**



PROJECTED PLANE
1 TO 1 MAXIMUM FROM TOE
OF SLOPE TO APPROVED GROUND

NATURAL
GROUND

2' MIN.
KEY DEPTH

15' MIN.
LOWEST BENCH
(KEY)

BENCH

4' TYPICAL
BENCH
HEIGHT

COMPACTED
FILL

REMOVE
UNSUITABLE
MATERIAL

FILL SLOPE

CUT FACE
SHALL BE CONSTRUCTED PRIOR
TO FILL PLACEMENT TO ASSURE
ADEQUATE GEOLOGIC CONDITIONS

NATURAL
GROUND

2' MIN.
KEY DEPTH

15' MIN.
LOWEST BENCH

BENCH

4' TYPICAL
BENCH
HEIGHT

REMOVE
UNSUITABLE
MATERIAL

COMPACTED
FILL

FILL-OVER-CUT
SLOPE

CUT FACE
TO BE CONSTRUCTED PRIOR
TO FILL PLACEMENT

NATURAL
GROUND

CUT-OVER-FILL
SLOPE

OVERBUILT AND
TRIM BACK

DESIGN SLOPE

PROJECTED PLANE
1 TO 1 MAXIMUM FROM
TOE OF SLOPE TO
APPROVED GROUND

2' MIN.
KEY DEPTH

15' MIN.
LOWEST BENCH
(KEY)

BENCH

4' TYPICAL
BENCH
HEIGHT

COMPACTED
FILL

REMOVE
UNSUITABLE
MATERIAL

For Subdrains See
Standard Detail C

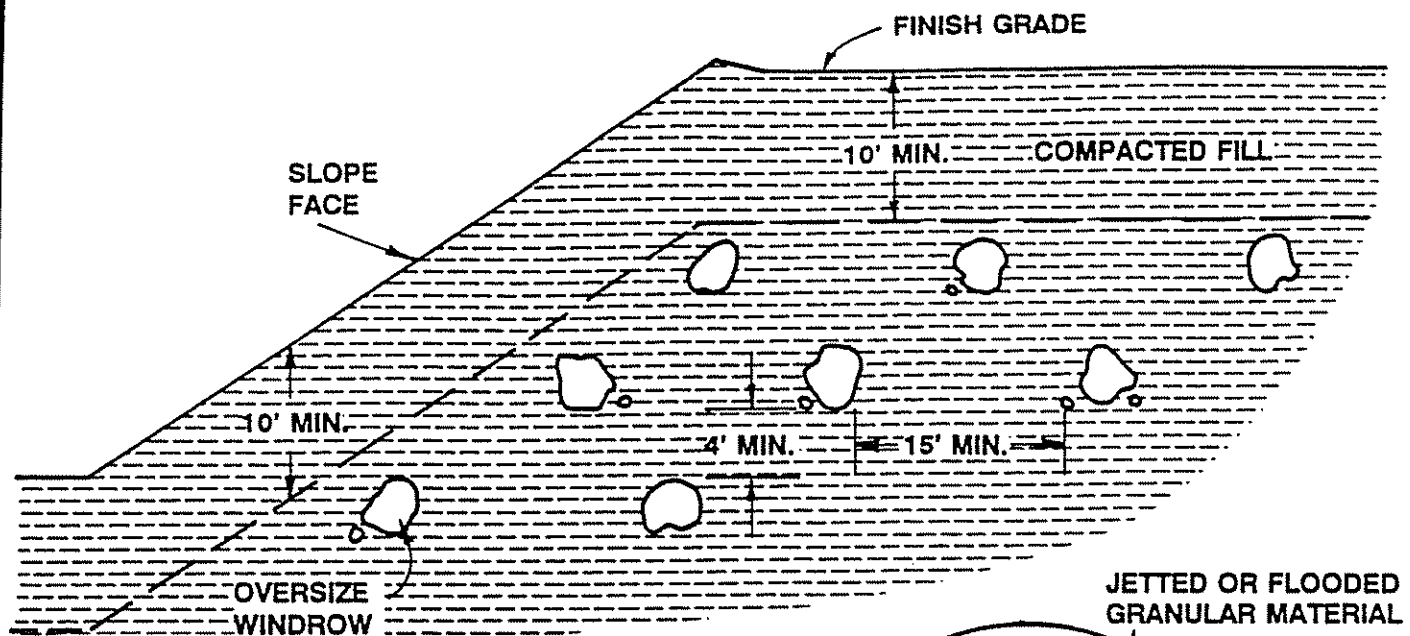
BENCHING SHALL BE DONE WHEN SLOPES
ANGLE IS EQUAL TO OR GREATER THAN 5:1
MINIMUM BENCH HEIGHT SHALL BE 4 FEET
MINIMUM FILL WIDTH SHALL BE 9 FEET

KEYING AND BENCHING

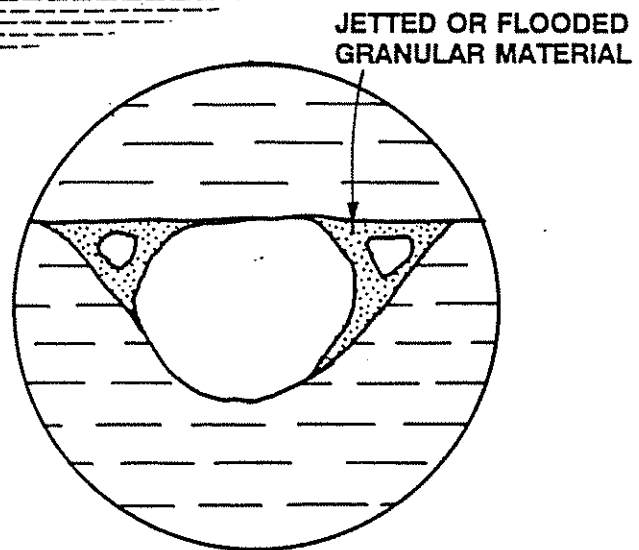
GENERAL EARTHWORK AND GRADING
SPECIFICATIONS
STANDARD DETAILS A



REV. 4/11/86

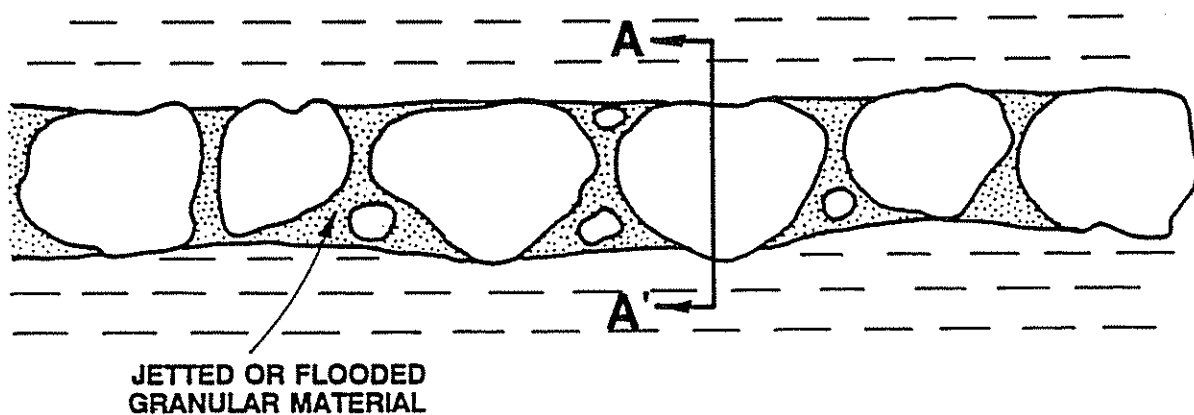


- Oversize rock is larger than 8 inches in largest dimension.
- Excavate a trench in the compacted fill deep enough to bury all the rock.
- Backfill with granular soil jetted or flooded in place to fill all the voids.
- Do not bury rock within 10 feet of finish grade.
- Windrow of buried rock shall be parallel to the finished slope fill.



ELEVATION A-A'

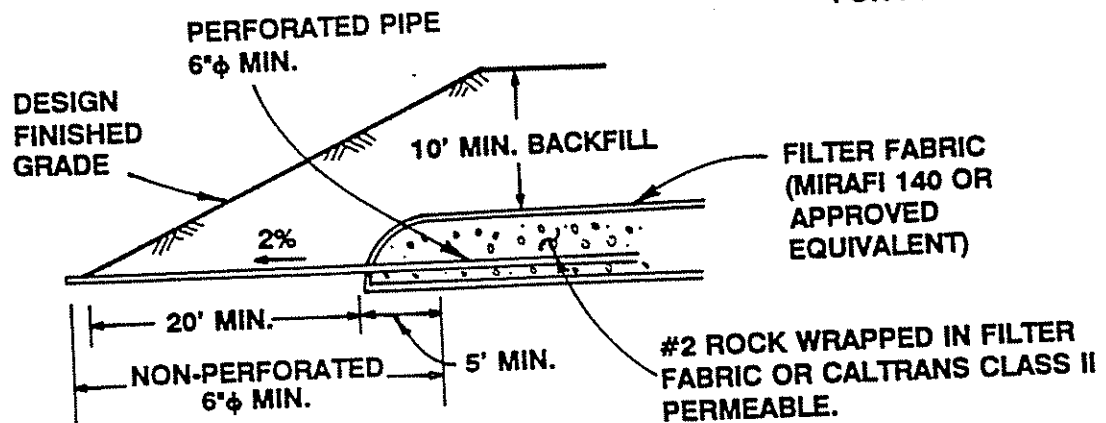
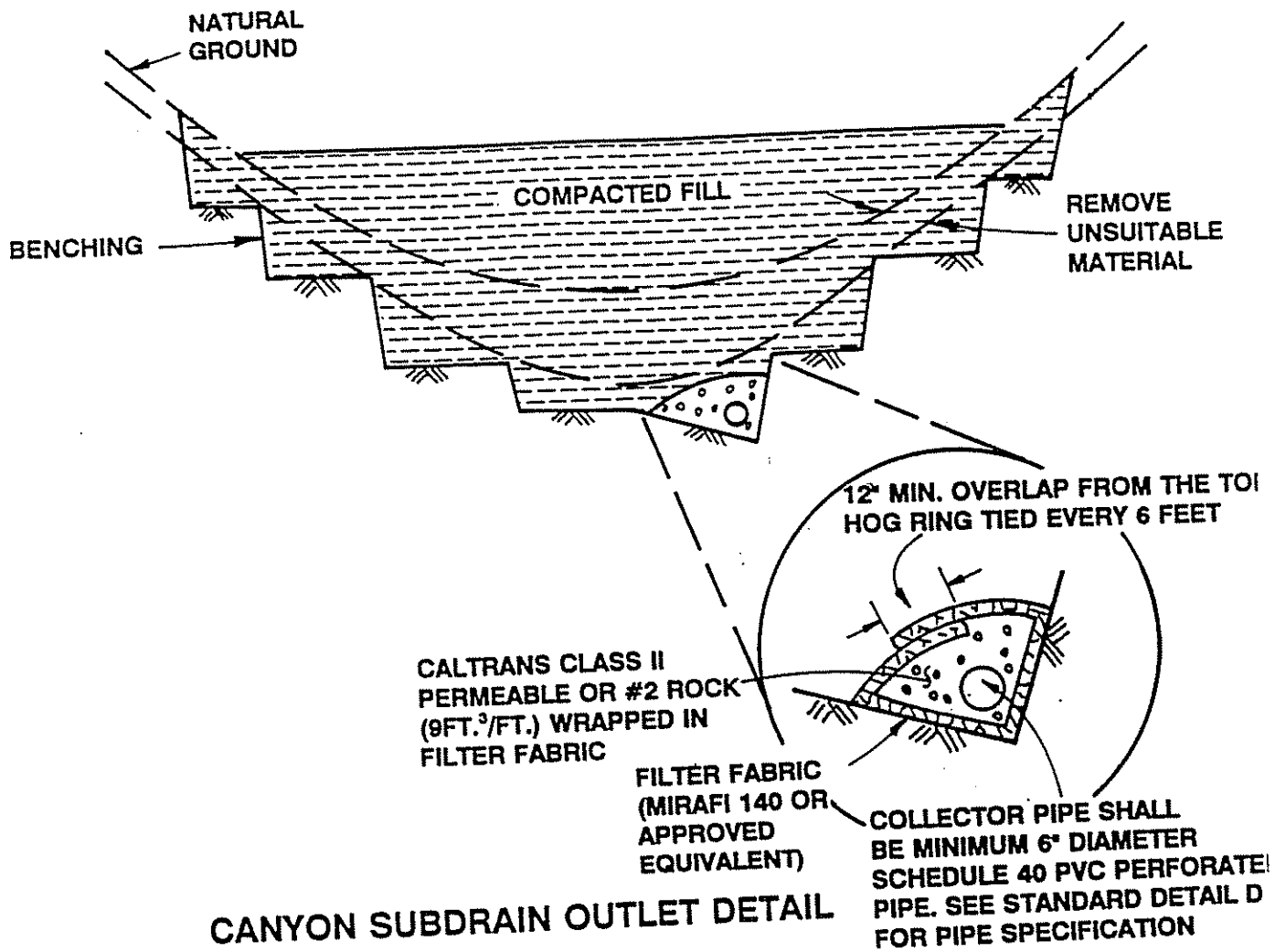
PROFILE ALONG WINDROW



**OVERSIZE
ROCK DISPOSAL**

**GENERAL EARTHWORK AND GRADING
SPECIFICATIONS
STANDARD DETAILS B**



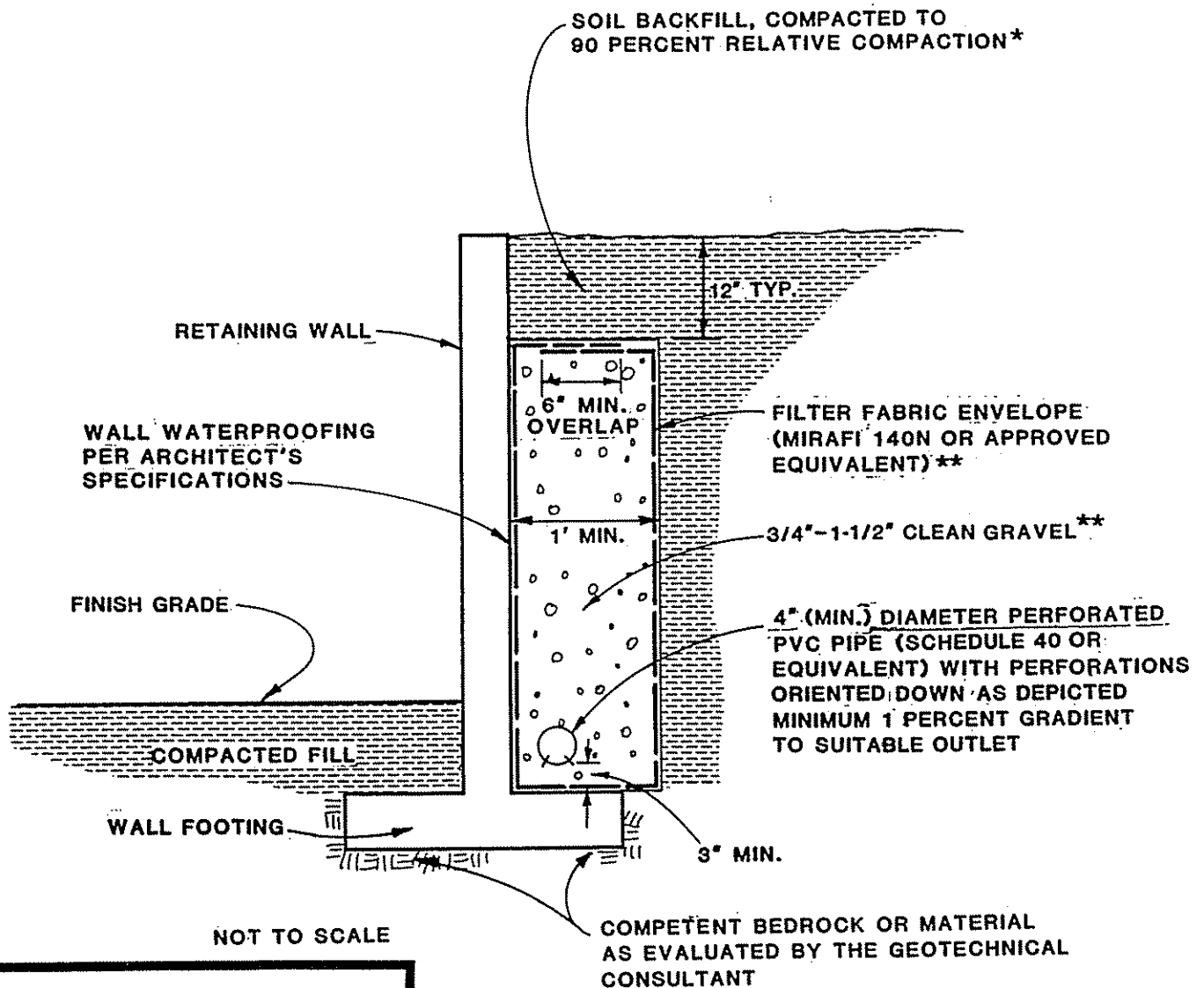


CANYON SUBDRAINS

**GENERAL EARTHWORK AND GRADING
SPECIFICATIONS
STANDARD DETAILS C**



RETAINING WALL DRAINAGE DETAIL



SPECIFICATIONS FOR CALTRANS CLASS 2 PERMEABLE MATERIAL

U.S. Standard Sieve Size	% Passing
1"	100
3/4"	90-100
3/8"	40-100
No. 4	25-40
No. 8	18-33
No. 30	5-15
No. 50	0-7
No. 200	0-3

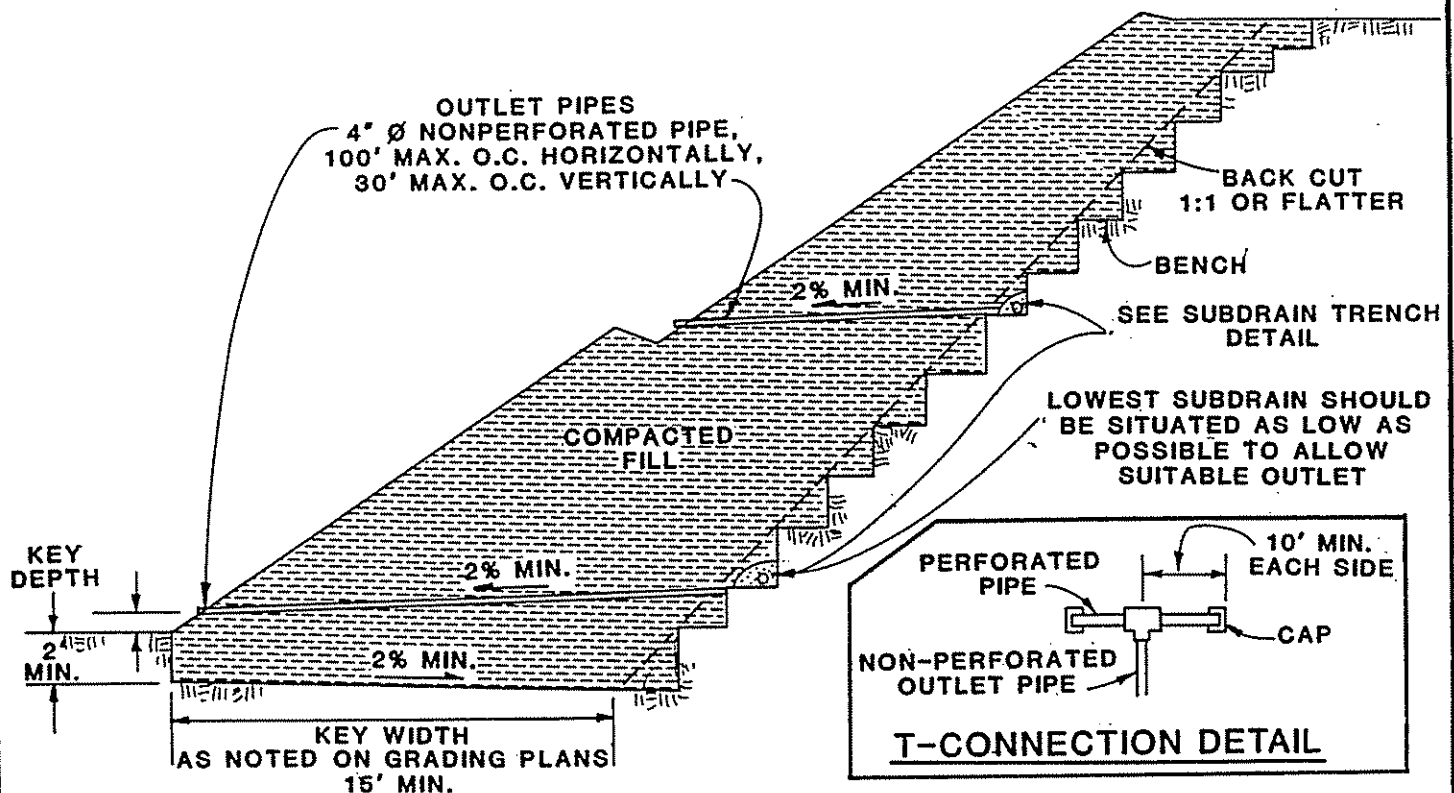
Sand Equivalent > 75

* BASED ON ASTM D1557

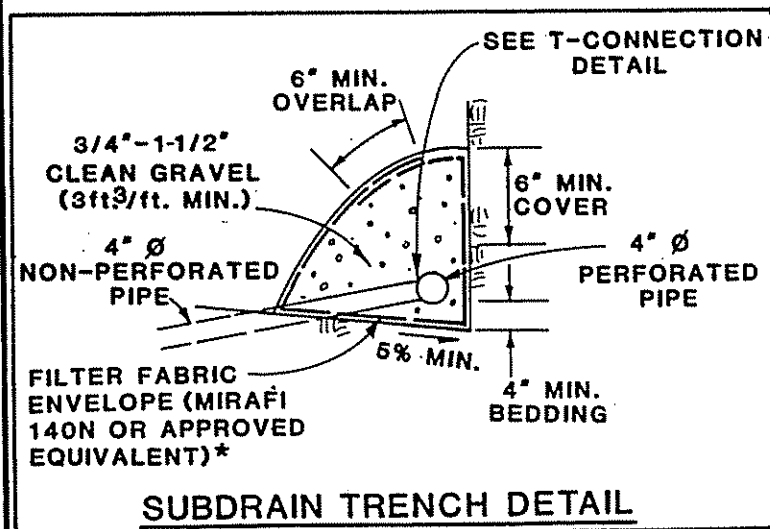
** IF CALTRANS CLASS 2 PERMEABLE MATERIAL (SEE GRADATION TO LEFT) IS USED IN PLACE OF 3/4"-1-1/2" GRAVEL, FILTER FABRIC MAY BE DELETED. CALTRANS CLASS 2 PERMEABLE MATERIAL SHOULD BE COMPACTED TO 90 PERCENT RELATIVE COMPACTION*

NOTE: COMPOSITE DRAINAGE PRODUCTS SUCH AS MIRADRAIN OR J-DRAIN MAY BE USED AS AN ALTERNATIVE TO GRAVEL OR CLASS 2. INSTALLATION SHOULD BE PERFORMED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

STABILITY FILL / BUTTRESS DETAIL



* IF CALTRANS CLASS 2 PERMEABLE MATERIAL IS USED IN PLACE OF 3/4"-1-1/2" GRAVEL, FILTER FABRIC MAY BE DELETED



SPECIFICATIONS FOR CALTRANS CLASS 2 PERMEABLE MATERIAL

U.S. Standard Sieve Size	% Passing
1"	100
3/4"	90-100
3/8"	40-100
No. 4	25-40
No. 8	18-33
No. 30	5-15
No. 50	0-7
No. 200	0-3

Sand Equivalent >75

NOTES:

For buttress dimensions, see geotechnical report/plans. Actual dimensions of buttress and subdrain may be changed by the geotechnical consultant based on field conditions.

SUBDRAIN INSTALLATION-Subdrain pipe should be installed with perforations down as depicted. At locations recommended by the geotechnical consultant, nonperforated pipe should be installed

SUBDRAIN TYPE-Subdrain type should be Acrylonitrile Butadiene Styrene (A.B.S.), Polyvinyl Chloride (PVC) or approved equivalent. Class 125, SDR 32.5 should be used for maximum fill depths of 35 feet. Class 200, SDR 21 should be used for maximum fill depths of 100 feet.

*
* E Q F A U L T *
*
* Version 3.00 *
*

DETERMINISTIC ESTIMATION OF
PEAK ACCELERATION FROM DIGITIZED FAULTS

JOB NUMBER: 040129.001

DATE: 10-05-2000

JOB NAME: Dudek and Associates

CALCULATION NAME: Test Run Analysis

FAULT-DATA-FILE NAME: CDMGFLTE.DAT

SITE COORDINATES:

SITE LATITUDE: 32.5942

SITE LONGITUDE: 117.0898

SEARCH RADIUS: 100 mi

ATTENUATION RELATION: 3) Boore et al. (1997) Horiz. - NEHRP D (250)

UNCERTAINTY (M=Median, S=Sigma): S Number of Sigmas: 1.0

DISTANCE MEASURE: cd_2drp

SCOND: 0

Basement Depth: 5.00 km Campbell SSR: Campbell SHR:

COMPUTE PEAK HORIZONTAL ACCELERATION

FAULT-DATA FILE USED: CDMGFLTE.DAT

MINIMUM DEPTH VALUE (km): 0.0

EQFAULT SUMMARY

DETERMINISTIC SITE PARAMETERS

Page 1

ABBREVIATED FAULT NAME	APPROXIMATE DISTANCE mi (km)	ESTIMATED MAX. EARTHQUAKE EVENT		
		MAXIMUM EARTHQUAKE MAG. (Mw)	PEAK SITE ACCEL. g	EST. SITE INTENSITY MOD. MERC.
ROSE CANYON	8.2 (13.2)	6.9	0.472	X
CORONADO BANK	12.6 (20.2)	7.4	0.457	X
NEWPORT-INGLEWOOD (Offshore)	43.6 (70.1)	6.9	0.137	VIII
ELSINORE-JULIAN	45.9 (73.9)	7.1	0.146	VIII
ELSINORE-COYOTE MOUNTAIN	49.5 (79.7)	6.8	0.117	VII
EARTHQUAKE VALLEY	49.6 (79.9)	6.5	0.100	VII
ELSINORE-TEMECULA	54.2 (87.3)	6.8	0.109	VII
SAN JACINTO-COYOTE CREEK	66.4 (106.8)	6.8	0.094	VII
SAN JACINTO - BORREGO	66.9 (107.6)	6.6	0.084	VII
PALOS VERDES	68.6 (110.4)	7.1	0.107	VII
SAN JACINTO-ANZA	68.8 (110.8)	7.2	0.112	VII
LAGUNA SALADA	70.9 (114.1)	7.0	0.099	VII
SUPERSTITION MTN. (San Jacinto)	73.3 (118.0)	6.6	0.078	VII
ELSINORE-GLEN IVY	74.0 (119.1)	6.8	0.086	VII
ELMORE RANCH	78.0 (125.5)	6.6	0.074	VII
SUPERSTITION HILLS (San Jacinto)	78.4 (126.2)	6.6	0.074	VII
SAN JACINTO-SAN JACINTO VALLEY	79.8 (128.4)	6.9	0.086	VII
NEWPORT-INGLEWOOD (L.A. Basin)	85.1 (137.0)	6.9	0.081	VII
CHINO-CENTRAL AVE. (Elsinore)	88.4 (142.2)	6.7	0.087	VII
IMPERIAL	91.3 (147.0)	7.0	0.081	VII
WHITTIER	92.7 (149.2)	6.8	0.072	VII
SAN ANDREAS - Southern	93.4 (150.3)	7.4	0.099	VII
SAN ANDREAS - Coachella	93.4 (150.3)	7.1	0.084	VII
COMPTON THRUST	94.4 (152.0)	6.8	0.087	VII
BRAWLEY SEISMIC ZONE	94.6 (152.2)	6.4	0.058	VI
SAN ANDREAS - San Bernardino	97.6 (157.0)	7.3	0.090	VII
SAN JACINTO-SAN BERNARDINO	98.7 (158.8)	6.7	0.065	VI
ELYSIAN PARK THRUST	99.0 (159.4)	6.7	0.079	VII

-END OF SEARCH- 28 FAULTS FOUND WITHIN THE SPECIFIED SEARCH RADIUS.

THE ROSE CANYON
IT IS ABOUT 8.2 MILES (13.2 km) AWAY.

LARGEST MAXIMUM-EARTHQUAKE SITE ACCELERATION: 0.4715 g

DRAFT

CITY OF CHULA VISTA

SALT CREEK INTERCEPTOR SEWER PROJECT

ENVIRONMENTAL IMPACT REPORT

(EIR # 01-03)

CANDIDATE CEQA FINDINGS OF FACT

July 6, 2001

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BEFORE THE CHULA VISTA CITY COUNCIL

RE: Salt Creek Interceptor Sewer;
Environmental Impact Report EIR SCH #2000111072; EIR # 01-03

FINDINGS OF FACT

I.

INTRODUCTION

The Final Program Environmental Impact Report (Final Program EIR) prepared for the Salt Creek Interceptor Sewer Project (Project) addressed the potential environmental effects of a proposed pipeline facility including an interceptor and four laterals spanning from the Salt Creek drainage in Eastern Chula Vista to the western edge of the City via Main Street at a project level of analysis. The analysis of the Staff Recommended Alignment Alternative Project included discussion of Policy Option 1 and Policy Option 2, as alternative alignments for a portion of the span aimed at reducing certain potential environmental impacts. The Draft Program EIR also addressed potential effects of a connecting trunk sewer within the Wolf Canyon drainage area of Eastern Chula Vista and an additional lateral from the EastLake Panhandle at a program level, however those portions of project have been omitted from the Final Program EIR and are not being considered as part of the project description.

In addition, the Final Program EIR evaluated two alternatives to the proposed project: 1) The No Project alternative, which assumes no development of the Salt Creek Interceptor Sewer and; 2) A locational alternative which involves placement of the pipeline within existing sewer easements through a series of pump stations. The Addendum to the Final Program EIR also evaluated two additional policy options, Policy Option 3 and Policy Option 4, for a portion of the span of the Staff Recommended Alignment Alternative. Policy Option 3, is a dual pipe alternative in the same alignment as Policy Option 1, but with no access road. Policy Option 4, involves tunneling under sensitive habitat areas and following the alignment of Policy Option 2 for a portion of the proposed option. These Findings address Policy Option 3, which is proposed to be carried forward as the preferred alignment in the area where policy options have been considered. The impacts and mitigation measures for Policy Option 3 are the same as those identified and proposed under Policy Option 1 in the Final EIR.

This Program EIR has been prepared in accordance with the requirements of the City of Chula Vista Environmental Review Guidelines. These findings have been prepared to comply with requirements of the California Environmental Quality Act (CEQA) (Pub. Resources Code, 21000 et seq.) and the CEQA Guidelines (Cal. Code Regs., title 14, 15000 et seq.).

II.

DEFINITIONS

“ACOE” means U.S. Army Corps of Engineers.

“APCD” means San Diego Air Pollution Control District.

“BMPs” means best management practices.

“CEQA” means California Environmental Quality Act.

“CDFG” means California Department of Fish and Game.

“City” means City of Chula Vista.

“CNEL” means community noise equivalent level.

“CPF” means Community Purpose Facilities.

“dB(A)” means A-weighted decibels

“du/ac” means dwelling units per acre.

“GDP” means General Development Plan.

“LOS” means Level of Service.

“MSCP” means Multiple Species Conservation Program.

“NPDES” means National Pollutant Discharge Elimination System.

“OTC” means Olympic Training Center.

“OWD” means Otay Water District.

“PFFP” means Public Facilities Financing Plan.

“RAQS” means Regional Air Quality Standards.

“RWQCB” means Regional Water Quality Control Board.

“SANDAG” means San Diego Association of Governments.

“SCAQMD” means South Coast Air Quality Management District.

“SEIR” means Subsequent Environmental Impact Report.

“SPA” means Sectional Planning Area.

“SR” means State Route.

“SWPPP” means Storm Water Pollution Prevention Plan.

“SWRCB” means State Water Resources Control Board.

“USFWS” means United States Fish and Wildlife Service

III.

PROJECT DESCRIPTION

The proposed pipe facilities would range in size from approximately 21 inches to approximately 48 inches, and would convey up to 13 million gallons per day (MGD) of sewage. The City of San Diego has indicated that the flows conveyed by these facilities have been anticipated in the design of their receiving facilities, based on growth projections by the San Diego Association of Governments (SANDAG). Reach 9B is the westernmost portion of the pipeline, with Reaches 8A/B through 6 moving east through the Otay River Valley. Reach 5 turns north at Salt Creek Canyon, and Reaches 4 and 3 continue north up the canyon to Olympic Parkway. Reach 1 has already been constructed and Reach 2 has been studied and its alignment approved as part of approved development within which the Reach is located. Reaches 1 and 2 are not considered to be part of the proposed project.

Also, the project proposes associated facilities, including but not limited to, three sewer laterals serving Village 11 on the west side of Salt Creek, and one sewer lateral serving the Olympic Training Center on the east side of Salt Creek. The EIR addresses the laterals serving Village 11 and the Olympic Training Center at a “project level.” Unless expressly indicated otherwise, all analyses of potential impacts presented by the construction and maintenance of the Village 11 and the Olympic Training Center laterals in addition to the reaches of the interceptor are at the project level.

Discretionary Actions

In order to complete this process, the following discretionary approvals from the City of Chula Vista City Council are being sought:

- Staff Recommended Alignment with one of the Policy Options as evaluated in the proposed project description and Addendum.
- Permits required from the resource agencies, include a 1600 Streambed Alteration Agreement from the California Department of Fish and Game, a 404 Permit from the U.S. Army Corps of Engineers and a 401 certification, and an NPDES permit from the Regional Water Quality Control Board. A Section 10 (a)(1)(b) permit may be required from the U.S. Fish and Wildlife Service, and similar take authorization may be required from the California Department of Fish and Game for impacts to threatened and listed species. Such permits will not be necessary, however, if the City has take authorization under the MSCP Subarea Plan for all species affected by this Project.
- An encroachment permit from Caltrans will be necessary for the proposed crossing of Interstate 5, Interstate 805 and possibly SR125 should the right-of-way for this facility be owned by Caltrans prior to construction of the proposed project. An encroachment permit from the City of San Diego would be necessary for the crossing of Interstate 5 and Hollister Street as well as the potential crossing of a water line facility. An encroachment permit from the San Diego County Water Authority would be necessary for construction across existing easements. An encroachment permit from San Diego Gas and Electric would be necessary for construction across electric and gas line easements. An encroachment permit from the Metropolitan Transit Development Board would be necessary for construction beneath the San Ysidro Trolley line.

The City of Chula Vista is the Lead Agency and has discretionary power of approval for all the actions sought for the proposed project. This Program EIR is intended to satisfy CEQA requirements for environmental review of those actions. Future discretionary approvals may be required. No other actions by other agencies or jurisdictions have been identified that would be required to accomplish the project as proposed.

Project Goals and Objectives

The goals and objectives of the proposed Salt Creek Interceptor Project can be summarized as follows:

The objectives of the Project are to provide adequate and efficient sewage conveyance facilities for existing and approved development in the easternmost areas of the City of Chula Vista, in accordance with the following objectives:

- In the developed portions of the City, the alignment of pipeline facilities should follow existing roads or other linear public rights-of-way where practicable, rather than establishing new easements over developed private property.

- Consideration should be given to Chula Vista City Council Policy #570-03, related to future decisions minimizing the use of sewage pump stations.
- Within Reach 5 an existing segment of the pipeline was constructed in 1995 in conjunction with construction of a high pressure gas line in a parallel easement. The Salt Creek Interceptor would connect to this existing facility.

IV.

RECORD OF PROCEEDINGS

For purposes of CEQA and the findings set forth below, the administrative record of the City Council decision on the environmental analysis of this project shall consist of the following:

- The Notice of Preparation and all other public notices issued by the City in conjunction with the Project;
- The Draft and Final Program EIR for the project (EIR # 01-03), including the Addendum, appendices and technical reports;
- All comments submitted by agencies or members of the public during the 45-day public comment period on the Draft EIR;
- All comments and correspondence submitted to the City with respect to the Project, in addition to timely comments on the Draft EIR;
- The mitigation monitoring and reporting program for the Project;
- All findings and resolutions adopted by City decisionmakers in connection with the Project, and all documents cited or referred to therein;
- All reports, studies, memoranda, maps, staff reports, or other planning documents relating to the Project prepared by the City, consultants to the City, or responsible or trustee agencies with respect to the City's compliance with the requirements of CEQA and with respect to the City's actions on the Project;
- All documents submitted to the City by other public agencies or members of the public in connection with the Project, up through the close of the public hearing on July 10, 2001;

- All documents submitted by members of the public and public agencies in connection with the EIR on the project;
- Minutes and verbatim transcripts of all workshops, public meetings, and public hearings held by the City of Chula Vista, or videotapes where transcripts are not available or adequate;
- Any documentary or other evidence submitted at workshops, public meetings, and public hearings; and
- Matters of common knowledge to the City of Chula Vista which they consider, including but not limited to the following:
 - Chula Vista General Plan
 - Relevant portions of the Zoning Codes of the City of Chula Vista
 - Final EastLake Planned Community Master EIR (EIR 81-3)
 - EastLake III/Olympic Training Center Final EIR (EIR 89-9)
 - Otay Ranch GDP EIR (EIR 90-01)
 - Any documents expressly cited in these findings, in addition to those cited above; and
 - Otay Ranch Village 11 EIR (EIR 01-02) Federal, State, and local laws and regulations;
 - Any other materials required to be in the record of proceedings by Public Resources Code section 21167.6, subdivision (e).

The custodian of the documents comprising the record of proceedings is Susan Bigelow, Clerk to the City Council, whose office is located at 276 Fourth Avenue, Chula Vista, California, 91910.

The City Council has relied on all of the documents listed above in reaching its decision on the Project, even if not every document was formally presented to the City Council or City Staff as part of the City files generated in connection with the Project. Without exception, any documents set forth above not found in the Project files fall into one of two categories. Many of them reflect prior planning or legislative decisions with which the City was aware in approving the Salt Creek Interceptor Project. (See City of Santa Cruz v. Local Agency Formation Commission (1978) 76 Cal.App.3d 381, 391-392 [142 Cal.Rptr. 873]; Dominey v. Department of Personnel Administration (1988) 205

Cal.App.3d 729, 738, fn. 6 [252 Cal.Rptr. 620].) Other documents influenced the expert advice provided to City Staff or consultants, who then provided advice to the City. For that reason, such documents form part of the underlying factual basis for the City's decisions relating to the adoption of Project. (See Pub. Resources Code, § 21167.6, subd. (e)(10); Browning-Ferris Industries v. City Council of City of San Jose (1986) 181 Cal.App.3d 852, 866 [226 Cal.Rptr. 575]; Stanislaus Audubon Society, Inc. v. County of Stanislaus (1995) 33 Cal.App.4th 144, 153, 155 [39 Cal.Rptr.2d 54].)

V.

TERMINOLOGY/THE PURPOSE OF FINDINGS UNDER CEQA

Public Resources Code section 21002 provides that "public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would *substantially lessen* the significant environmental effects of such projects[.]" (Emphasis added.) The same statute states that the procedures required by CEQA "are intended to assist public agencies in systematically identifying both the significant effects of proposed projects and the feasible alternatives or feasible mitigation measures which will *avoid* or *substantially lessen* such significant effects." (Emphasis added.) Section 21002 goes on to state that "in the event [that] specific economic, social, or other conditions make infeasible such project alternatives or such mitigation measures, individual projects may be approved in spite of one or more significant effects."

The mandate and principles announced in Public Resources Code section 21002 are implemented, in part, through the requirement that agencies must adopt findings before approving projects for which EIRs are required. (See Pub. Resources Code, § 21081, subd. (a); CEQA Guidelines, § 15091, subd. (a).) For each significant environmental effect identified in an EIR for a proposed project, the approving agency must issue a written finding reaching one or more of three permissible conclusions. The first such finding is that "[c]hanges or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect as identified in the final EIR." (CEQA Guidelines, § 15091, subd. (a)(1).) The second permissible finding is that "[s]uch changes or alterations are within the responsibility and jurisdiction of another public agency and not the agency making the finding. Such changes have been adopted by such other agency or can and should be adopted by such other agency." (CEQA Guidelines, § 15091, subd. (a)(2).) The third potential conclusion is that "[s]pecific economic, legal, social, technological, or other considerations, including provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or project alternatives identified in the final EIR." (CEQA Guidelines, § 15091, subd. (a)(3).) Public Resources Code section 21061.1 defines "feasible" to mean "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social and

technological factors." CEQA Guidelines section 15364 adds another factor: "legal" considerations. (See also Citizens of Goleta Valley v. Board of Supervisors ("Goleta II") (1990) 52 Cal.3d 553, 565 [276 Cal. Rptr. 410].)

The concept of "feasibility" also encompasses the question of whether a particular alternative or mitigation measure promotes the underlying goals and objectives of a project. (City of Del Mar v. City of San Diego (1982) 133 Cal.App.3d 410, 417 [183 Cal.Rptr. 898].) "[F]easibility' under CEQA encompasses 'desirability' to the extent that desirability is based on a reasonable balancing of the relevant economic, environmental, social, and technological factors." (Ibid.; see also Sequoyah Hills Homeowners Assn. v. City of Oakland (1993) 23 Cal.App.4th 704, 715 [29 Cal.Rptr.2d 182].)

The CEQA Guidelines do not define the difference between "avoiding" a significant environmental effect and merely "substantially lessening" such an effect. The City must therefore glean the meaning of these terms from the other contexts in which the terms are used. Public Resources Code section 21081, on which CEQA Guidelines section 15091 is based, uses the term "mitigate" rather than "substantially lessen." The CEQA Guidelines therefore equate "mitigating" with "substantially lessening." Such an understanding of the statutory term is consistent with the policies underlying CEQA, which include the policy that "public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects." (Pub. Resources Code, § 21002.)

For purposes of these findings, the term "avoid" refers to the effectiveness of one or more mitigation measures to reduce an otherwise significant effect to a less than significant level. In contrast, the term "substantially lessen" refers to the effectiveness of such measure or measures to substantially reduce the severity of a significant effect, but not to reduce that effect to a less than significant level. These interpretations appear to be mandated by the holding in Laurel Hills Homeowners Association v. City Council (1978) 83 Cal.App.3d 515, 519-527 [147 Cal.Rptr. 842], in which the Court of Appeal held that an agency had satisfied its obligation to substantially lessen or avoid significant effects by adopting numerous mitigation measures, not all of which rendered the significant impacts in question (e.g., the "regional traffic problem") less than significant.

Although CEQA Guidelines section 15091 requires only that approving agencies specify that a particular significant effect is "avoid[ed] or substantially lessen[ed]," these findings, for purposes of clarity, in each case will specify whether the effect in question has been reduced to a less than significant level, or has simply been substantially lessened but remains significant.

Moreover, although section 15091, read literally, does not require findings to address environmental effects that an EIR identifies as merely "potentially significant," these findings will nevertheless fully account for all such effects identified in the Final EIR.

In short, CEQA requires that the lead agency adopt mitigation measures or alternatives, where feasible, to substantially lessen or avoid significant environmental impacts that would otherwise occur. Project modification or alternatives are not required, however, where such changes are infeasible or where the responsibility for modifying the project lies with some other agency. (CEQA Guidelines, § 15091, subd. (a), (b).)

With respect to a project for which significant impacts are not avoided or substantially lessened either through the adoption of feasible mitigation measures or feasible environmentally superior alternative, a public agency, after adopting proper findings, may nevertheless approve the project if the agency first adopts a statement of overriding considerations setting forth the specific reasons why the agency found that the project's "benefits" rendered "acceptable" its "unavoidable adverse environmental effects." (CEQA Guidelines, §§ 15093, 15043, subd. (b); see also Pub. Resources Code, § 21081, subd. (b).) The California Supreme Court has stated that, "[t]he wisdom of approving . . . any development project, a delicate task which requires a balancing of interests, is necessarily left to the sound discretion of the local officials and their constituents who are responsible for such decisions. The law as we interpret and apply it simply requires that those decisions be informed, and therefore balanced." (Goleta II, 52 Cal.3d 553, 576.)

VI.

LEGAL EFFECT OF FINDINGS

To the extent that these findings conclude that proposed mitigation measures outlined in the Program EIR are feasible and have not been modified, superseded or withdrawn, the City of Chula Vista ("City" or "decisionmakers") hereby binds itself and any other responsible parties, to implement those measures. These findings, in other words, are not merely informational or hortatory, but constitute a binding set of obligations that will come into effect when the City adopts the resolution(s) approving the project.

The adopted mitigation measures are express conditions of approval. Other requirements are referenced in the mitigation monitoring reporting program adopted concurrently with these findings, and will be effectuated through the process of implementing the project.

VII.

MITIGATION MONITORING PROGRAM

As required by Public Resources Code section 21081.6, subd. (a)(1), the City of Chula Vista, in adopting these findings, also adopts a mitigation monitoring and reporting program as prepared by the environmental consultant under the direction of the City. The

program is designed to ensure that during project implementation, the applicant and any other responsible parties comply with the feasible mitigation measures identified below. The program is described in the document titled Salt Creek Interceptor Sewer Mitigation Monitoring Reporting Program.

VIII.

SIGNIFICANT EFFECTS AND MITIGATION MEASURES

The Program EIR identified a number of direct and indirect significant environmental effects (or “impacts”) that the project will cause; some can be fully avoided through the adoption of feasible mitigation measures, while others cannot be avoided.

The project will result in significant environmental changes to the following issues: aesthetics, air quality, biological resources, cultural resources, geology and soils, hydrology and water quality, land use and planning, noise traffic/transportation and paleontological resources as a result of the Salt Creek Interceptor Sewer, Village 11 Laterals, and Olympic Training Center Lateral. These significant environmental changes or impacts are discussed in Program EIR # 01-03 (City ID #) in Table ES-1 on pages ES-4 through ES-25 and in Chapter 3.0, pages 3.1-5 through 3.10-5.

The proposed project would also result in significant irreversible environmental changes to land use, biological resources, energy and cultural resources.

A. AESTHETICS

Standards of Significance:

- The project will have a substantial, demonstrative negative aesthetic effect.
- The project will result in adverse alteration of existing long-duration foreground or middle ground views from public viewing places.
- A substantial adverse visual alteration to any onsite natural feature due to grading or construction of structures or roads. Considering such alterations, a significant impact is inconsistent with the Chula Vista General Plan which states that open space provides for the preservation of scenic vistas.

Reaches 3 and 4 Policy Option 2

Significant Impact: The placement of the pump station would create a direct project impact on aesthetics. [Program EIR, Subchapter 3.1, pp. 3.1-8]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the SEIR, below a level of significance.

Explanation: Because Policy Option 2 is not a gravity flow line, it would require the placement of above-ground lift, or pump, stations. The construction of these pump stations could create a negative aesthetic effect in or near the preserve because the pump stations would be visible where they would not otherwise exist. To reduce the effects, the design of the pump station housing and landscaping could include camouflaging and other techniques to blend the pump stations into the preserve.

Mitigation Measure: The following mitigation measure is feasible and is required as a condition of approval and is made binding on the City through these findings. [Program EIR, Subchapter 3.1, pp. 3.1-9]

- The City will appropriately design the pump station housing, landscaping techniques to blend into the natural contour and surrounding vegetation, and include additional camouflaging techniques appropriate within the preserve.

Significance After Mitigation: Less than significant.

B. AIR QUALITY

Standards of Significance

- Conflict with or obstruction of the implementation of an applicable air quality plan;
- Result in the release of substantial concentrations of pollutants such as ozone or respirable particulates (PM10);
- Create objectionable odors affecting a substantial number of people.

Reaches 3-9A/B, Policy Options 1, 2, 3 or 4

Significant Impact : Direct project impacts from PM10 emissions during construction for all reaches and Policy Options. [Program EIR, Subchapter 3.2, pp. 3.2-6 through 3.2-7]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the SEIR, below a level of significance.

Explanation: Due to the necessity of excavating for preparation of the pipeline bed, transporting excess spoil soil and recovering the trench once the pipeline is in place, soil movement is necessary. The movement of soil resources in the capacity described for the project would result in the release of PM10 into the air. To reduce the significance of these effects, best management practices outlined in Subchapter 3.2, pp. 3.2-9 would be incorporated.

Mitigation Measure: The following mitigation measures are feasible and are required as a condition of approval and are made binding on the City through these findings. [Program EIR, Subchapter 3.2, pp. 3.2-9]

- The following Best Management Practices (BMPs) shall be employed during all earthwork phases of the project:
 1. The construction disturbance “footprint” shall be kept as small as possible;
 2. Using adequate water and/or other dust palliatives on all disturbed areas in order to avoid particle blow-off;
 3. Washing down or sweeping streets from which site access is taken to remove dirt carried from the site to the street to keep vehicles from pulverizing the dirt into fine particles;
 4. Periodically street sweepers will be utilized to aid in the removal of dirt carried from the site to the street.
 5. Terminating soil excavation, clearing or grading when wind speeds exceed 25 mph for an hourly average;
 6. Covering/tarping all vehicles hauling spoils on public roadways unless additional moisture is added to prevent material blow-off during transport;

Significance After Mitigation: Less than Significant.

Significant Impact : Direct impacts to surrounding lands uses from fugitive dust emissions as a result of hauling excavated material from the site [Program EIR, Subchapter 3.2, pp. 3.2-6]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the SEIR, below a level of significance.

Explanation: Due to the necessity of excavating for preparation of the pipeline bed, transporting excess spoil soil and recovering the trench once the pipeline is in place, soil movement is necessary. The movement of soil resources in the capacity described for the project would result in the release of PM10 into the air. To reduce the significance of these effects, best management practices outlined in Subchapter 3.2, pp. 3.2-9 would be incorporated.

Mitigation Measure: The following mitigation measure is feasible and is required as a condition of approval and are made binding on the City through these findings. [Program EIR, Subchapter 3.2, pp. 3.2-9]

- The following Best Management Practices (BMPs) shall be employed during all earthwork phases of the project:
 1. The construction disturbance “footprint” shall be kept as small as possible;
 2. Using adequate water and/or other dust palliatives on all disturbed areas in order to avoid particle blow-off;
 3. Washing down or sweeping streets from which site access is taken to remove dirt carried from the site to the street to keep vehicles from pulverizing the dirt into fine particles;
 4. Periodically street sweepers will be utilized to aid in the removal of dirt carried from the site to the street.
 5. Terminating soil excavation, clearing or grading when wind speeds exceed 25 mph for an hourly average;
 6. Covering/tarpping all vehicles hauling dirt or spoils on public roadways unless additional moisture is added to prevent material blow-off during transport;

Significance After Mitigation: Less than Significant.

Significant Impact : Direct project impacts as a result of combustion emissions. Even though these effects were not identified as significant, the San Diego Air Basin’s non-attainment of O3 and PM10 result in direct effects. [Program EIR, Subchapter 3.2, pp. 3.2-6 through 3.2-7]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the SEIR, below a level of significance.

Explanation: Due to the necessity of using fossil fuel powered equipment such as tract excavators, backhoes, dump trucks and diesel generators, the proposed project would result in a short-term increase in combustion emissions within the San Diego Air Basin. In order to reduce these effects, best management practices included in Subchapter 3.2 , pp. 3.2-9 of the EIR would be implemented. In addition, adherence to a traffic control plan would reduce emission impacts related to traffic delays and would therefore further reduce combustion emission related impacts.

Mitigation Measure: The following mitigation measures are feasible and are required as a condition of approval and are made binding on the City through these findings. [Program EIR, Subchapter 3.2, pp. 3.2-9]

- The following Best Management Practices (BMPs) shall be employed during all earthwork phases of the project:
 1. The construction disturbance “footprint” shall be kept as small as possible;
 2. Using adequate water and/or other dust palliatives on all disturbed areas in order to avoid particle blow-off;
 3. Washing down or sweeping streets from which site access is taken to remove dirt carried from the site to the street to keep vehicles from pulverizing the dirt into fine particles;
 4. Periodically street sweepers will be utilized to aid in the removal of dirt carried from the site to the street.
 5. Terminating soil excavation, clearing or grading when wind speeds exceed 25 mph for an hourly average;
 6. Covering/tarping all vehicles hauling dirt or spoils on public roadways unless additional moisture is added to prevent material blow-off during transport;
- The construction contractor shall comply with the approved traffic control plan to reduce non-project traffic congestion impacts. Methods to reduce construction interference with existing traffic and the prevention of truck queuing around local sensitive receptors shall be incorporated into this plan.

Significance After Mitigation: Less than Significant

Significant Impact : Direct project impacts to existing traffic flow on Main Street and Otay Valley Road [Program EIR, subchapter 3.2, pp. 3.2-7]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the SEIR, below a level of significance.

Explanation: Due to the necessity for construction within Main Street and Otay Valley Road, project construction would result in one lane closure on each roadway. Traffic delays which may occur as a result of a lane closure would result in an increase in combustion emissions. As outlined in the significance criteria, an increase in combustion emissions constitutes a significant impact. In order to reduce this effect, adherence to the traffic control plan outlined in Subchapter 3.9 of the EIR shall occur.

Mitigation Measure: The following mitigation measures are feasible and are required as a condition of approval and are made binding on the City through these findings. [Program EIR, Subchapter 3.2, pp. 3.2-9]

- The construction contractor shall comply with the approved traffic control plan to reduce non-project traffic congestion impacts. Methods to reduce construction interference with existing traffic and the prevention of truck queuing around local sensitive receptors shall be incorporated into this plan.

Significance After Mitigation: Less than Significant

Reaches 3-9A/B Policy Option 2

Significant Impact : Direct effect of odor impacts from the pump station [Program EIR, subchapter 3.2, pp. 3.2-8]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the SEIR, below a level of significance.

Explanation: Depending on location and operating circumstances, pump stations can have the potential to emit objectionable odors. The proposed pump station would be located close enough to existing and future residences to qualify as a potential odor impact. In order to reduce this effect, odor control practices and

mechanisms shall be incorporated into design of the pump station. Proper maintenance will also ensure that odor effects are reduced.

Mitigation Measure: The following mitigation measures is feasible and is required as a condition of approval and are made binding on the City through these findings. [Program EIR, Subchapter 3.2, pp. 3.2-9]

- Proper odor control practices and mechanisms shall be incorporated into the design of the pump station. The pump station shall also be properly maintained to avoid objectionable odors to surrounding land uses.

Significance After Mitigation: Less than Significant.

C. BIOLOGICAL RESOURCES

Standards of Significance

- Substantial effects, including indirect effects such as habitat fragmentation, on a rare or endangered species of plant or animal or habitat of that species is considered a significant impact.
- Substantial interference with the movement of any resident or migratory fish or wildlife species is considered a significant impact.
- Substantial reduction of habitat for fish, wildlife, or plants is considered a significant impact.
- Impacts considered adverse to the assemblage of a preserve design consistent with NCCP guidelines and planning efforts for this subregion are considered significant.

Vegetation Communities

Reaches 3-8 A/B Policy Options 1 or 3

Significant Impact : Development of Reaches 3-8 A/B Policy Options 1 or 3 would permanently impact a total of 3.21 acres of natural upland plant communities (0.36 acres of annual grassland, 0.89 acres of broom baccharis scrub, 0.22 acres of disturbed broom baccharis scrub, 1.56 acres of coastal sage scrub and 0.18 acre of disturbed coastal sage scrub), 0.31 acre of wetland communities (0.05 acre of cismontane alkali marsh, 0.07 acre of cismontane alkali marsh/freshwater marsh, 0.11 acre of disturbed wetland, 0.002 acre of mule fat scrub, 0.03 acre of mixed riparian scrub, 0.05 acre of tamarisk scrub) and 26.16 acres of non-natural upland communities (0.83 acre of agriculture, 12.44 acres of

disturbed habitat and 12.89 acres of developed land). [Program EIR, Subchapter 3.3, pp. 3.3-34 through 3.3-35]

In addition, the proposed project would temporarily impact a total of 4.36 acre of natural upland communities (0.38 acre of annual grassland, 0.89 acre of broom baccharis scrub, 0.20 acre of disturbed broom baccharis scrub, 2.73 acres of coastal sage scrub, 0.16 acre of disturbed coastal sage scrub and 0.004 acre of southern cactus scrub), 0.35 acre of wetland communities (0.06 acre of cismontane alkali marsh, 0.07 acre of cismontane alkali marsh/freshwater marsh, 0.09 acre of disturbed wetland, 0.01 acre of mule fat scrub, 0.07 mixed riparian scrub and 0.05 acre of tamarisk scrub) and 24.95 acres of non-natural upland communities (0.82 acre of agriculture, 11.38 acre of disturbed habitat and 12.75 acre of developed land). [Program EIR, Subchapter 3.3, pp. 3.3-34 through 3.3-35]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the SEIR, below a level of significance.

Explanation: Both permanent and temporary impacts to the above outlined habitat types would constitute a significant effect due to the sensitive nature of these resources. Disturbance to these habitats would result in impacts to rare or listed threatened or endangered species within the project area. This impact is identified as significant based on the significance criteria outlined above. The City will mitigate at the ratios outlined in Subchapter 3.3, pp. 3.3-48.

Mitigation Measures: The following mitigation measures are feasible and are required as a condition of approval and are made binding on the City through these findings. [Program EIR, Subchapter 3.3, pp. 3.3-48 through 3.3-50]

- UPLANDS:

Under the Subarea Plan - No additional mitigation is required for upland habitats, since the project is considered a "planned facility" and the conservation analysis for the MSCP and Subarea Plan considered implementation of the project. Under the Subarea Plan the project complies with the siting criteria identified in the Plan. Within the staging areas, natural upland habitats will be surveyed prior to construction and protected with construction fencing to prevent encroachment.

Without the Subarea Plan - Restoration of all temporary disturbance areas shall be conducted on site at a ratio of 1:1. For areas where direct permanent impacts will occur, mitigation of impacted coastal sage scrub (including undisturbed, disturbed and broom baccharis scrub) shall be provided at a ratio of 1:1. For southern cactus scrub, the

mitigation ratio shall be 3:1 for direct, permanent impacts. For non-native grasslands the ratio shall be 0.5:1. Mitigation for direct impacts shall be provided at an on site location within existing disturbed areas, or at an off site location within the City of Chula Vista. The revegetation plan will include collection of Otay tarplant seed within the impact area and dispersed in the adjacent area within the Chula Vista Preserve. The top four inches of topsoil disturbed by the project would be salvaged, as would native plants, and stored at clearly marked areas for use in the revegetation plan. Within the staging areas, natural upland habitats will be surveyed prior to construction and protected with construction fencing to prevent encroachment.

- **WETLANDS:**

With or without the Subarea Plan - Mitigation for wetland vegetation is required as follows: For permanent impacts, wetland habitat creation, enhancement, and/or restoration of like-quality and like-functioning habitat at a ratio of 2:1 shall be performed. For temporary impacts, onsite restoration or enhancement of the affected area at a ratio of 1:1 shall be performed.

Significance After Mitigation: Less than significant.

Reaches 3-8 A/B Policy Options 2 or 4

Significant Impact : Development of Reaches 3-8 A/B with Policy Options 2 or 4 would permanently impact a total of 2.22 acres of natural upland communities (0.43 acre of annual grassland, 0.04 acre of broom baccharis scrub, 1.69 acre of coastal sage scrub, 0.05 acre of disturbed coastal sage scrub, 0.01 acre of southern cactus scrub), 0.24 acre of wetland communities (0.03 acre of cismontane alkali marsh, 0.07 acre of cismontane alkali marsh/freshwater marsh, 0.11 acre of disturbed wetland and 0.03 acre of mixed riparian scrub) and 27.96 acres of non-natural upland communities (1.76 acres of agriculture, 12.88 acres of disturbed habitat and 13.32 acres of developed land). [Program EIR, subchapter 3.3, pp. 3.3-34 through 3.3-36]

Development of Reaches 3-8 A/B with Policy Options 2 or 4 would also temporarily impact a total of 3.38 acres of natural upland vegetation (0.43 acre of annual grassland, 0.03 acre of broom baccharis scrub, 2.87 acres of coastal sage scrub, 0.04 acre of disturbed coastal sage scrub, 0.01 acre of southern cactus scrub), 0.26 acre of wetland communities (0.03 acre of cismontane alkali marsh, 0.07 acre of cismontane alkali marsh/freshwater marsh, 0.09 acre of disturbed wetlands and 0.07 acre of mixed riparian scrub) and 26.73 acres of non-natural upland communities (1.76 acre of agriculture, 11.79 acres of disturbed habitat and 13.18 acres of developed land). [Program EIR, subchapter 3.3, pp. 3.3-34 through 3.3-36]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will

substantially lessen or avoid the significant environmental effect as identified in the SEIR, below a level of significance.

Explanation: Both permanent and temporary impacts to the above outlined habitat types would constitute a significant effect due to the sensitive nature of these resources. Disturbance to these habitats would result in impacts to rare or listed threatened or endangered species within the project area. This impact is identified as significant based on the significance criteria outlined above. The City will mitigate at the ratios outlined in Subchapter 3.3, pp. 3.3-48.

Mitigation Measures: The following mitigation measures are feasible and are required as a condition of approval and are made binding on the City through these findings. [Program EIR, Subchapter 3.3, pp. 3.3-48 through 3.3-50]

- UPLANDS:

Under the Subarea Plan - No additional mitigation is required for upland habitats, since the project is considered a “planned facility” and the conservation analysis for the MSCP and Subarea Plan considered implementation of the project. Under the Subarea Plan the project complies with the siting criteria identified in the Plan. Within the staging areas, natural upland habitats will be surveyed prior to construction and protected with construction fencing to prevent encroachment.

Without the Subarea Plan - Restoration of all temporary disturbance areas shall be conducted on site at a ratio of 1:1. For areas where direct permanent impacts will occur, mitigation of impacted coastal sage scrub (including undisturbed, disturbed and broom baccharis scrub) shall be provided at a ratio of 1:1. For southern cactus scrub, the mitigation ratio shall be 3:1 for direct, permanent impacts. For non-native grasslands the ratio shall be 0.5:1. Mitigation for direct impacts shall be provided at an on site location within existing disturbed areas, or at an off site location within the City of Chula Vista. The revegetation plan will include collection of Otay tarplant seed within the impact area and dispersed in the adjacent area within the Chula Vista Preserve. The top four inches of topsoil disturbed by the project would be salvaged, as would native plants, and stored at clearly marked areas for use in the revegetation plan. Within the staging areas, natural upland habitats will be surveyed prior to construction and protected with construction fencing to prevent encroachment.

- WETLANDS:

With or without the Subarea Plan - Mitigation for wetland vegetation is required as follows: For permanent impacts, wetland habitat creation, enhancement, and/or restoration of like-quality and like-functioning habitat at a ratio of 2:1 shall be

performed. For temporary impacts, onsite restoration or enhancement of the affected area at a ratio of 1:1 shall be performed.

Significance After Mitigation: Less than Significant.

Sensitive Plant Species

Reaches 3-8 A/B Policy Options 1 or 3

Significant Impact : Development of Reaches 3-8 A/B with Policy Options 1 or 3 would result in significant direct impacts to 2 southwestern spiny rush populations, 21 San Diego sunflower populations, 2 snake cholla populations and 1 variegated dudleya populations. Although the EIR does not identify impacts to 1 population of south coast salt scale, 7 populations of San Diego marsh-elder and 2 populations of San Diego barrel cactus as significant, these impacts are included as mitigation for the project includes mitigation for these species [Program EIR, subchapter 3.3, pp. 3.3-37 through 3.3-38]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the Program EIR, below a level of significance.

Explanation: Disturbance of existing rare plant individuals or populations is significant due to the general decline and subsequent concern over the vitality of these species throughout the San Diego County Area. As stated in the Significance Criteria, the project would result in a significant impact if it has an substantial effect, including an indirect effect, on a rare or endangered or otherwise sensitive plant or animal species. In order to reduce these impacts to levels below significance, the mitigation measures described below and on pp. 3.3-49 through 3.3-50 in the EIR will be implemented.

Mitigation Measures: The following mitigation measures are feasible and are required as a condition of approval and are made binding on the City through these findings. [Program EIR, Subchapter 3.3, pp. 3.3-49 through 3.3-50]

- *Under the Subarea Plan* - No additional mitigation is required for covered species, since the project is considered a “planned facility” and the conservation analysis for the MSCP and Subarea Plan considered implementation of the project. Under the Subarea Plan scenario, Spring 2001 surveys for narrow endemics will be conducted to supplement the current database regarding sensitive species within the area of potential effect. A determination will be made that no more than 5% of the individuals within the area of potential effect, for each narrow endemic species, would be directly impacted by the project.

Mitigation for impacts to non-covered species will be incorporation of seed or nursery stock of those species into the preserved and/or restoration areas. As an impact-reducing mitigation measure, salvagable plant species (San Diego barrel cactus, snake cholla and variegated dudleya) will be salvaged prior to construction and installed within the preserve (it should be noted that, while impacts to San Diego barrel cactus have not been identified as significant, the City proposes to conduct salvage for this species, and it is therefore, included in this mitigation measure). Also, impacts to San Diego sunflower will be mitigated through the use of San Diego sunflower seed or container plants in the revegetation of temporary impact areas on the project site. Any narrow endemic plant species found within the final staging areas will be avoided through the placement of construction fencing around those populations prior to construction. Indirect impacts shall be avoided through the use of Best Management Practices, including strict limitations for all construction and maintenance activities within the identified 40 foot and 20 foot corridors, respectively.

- *Without the Subarea Plan* - As an impact-reducing mitigation measure, salvagable plant species (San Diego barrel cactus, snake cholla and variegated dudleya) will be salvaged prior to construction and installed within the preserve (it should be noted that, while impacts to San Diego barrel cactus have not been identified as significant, the City proposes to conduct salvage for this species, and it is therefore, included in this mitigation measure). Also, impacts to San Diego sunflower will be mitigated through the use of San Diego sunflower seed or container plants in the revegetation temporary impact areas on the project site. Impacts to variegated dudleya and snake cholla will be mitigated through the preservation of habitat containing those species within the preserve. Any sensitive plant species found within the final staging areas will be avoided through the placement of construction fencing around those populations prior to construction. Indirect impacts shall be avoided through the use of Best Management Practices, including strict limitations for all construction and maintenance activities within the identified 40 foot and 20 foot corridors, respectively.

Significance After Mitigation: Less than Significant.

Reaches 3-8 A/B Policy Options 2 or 4

Significant Impact : Development of Reaches 3-8 A/B Policy Options 2 or 4 would result in 1 population of southwestern spiny rush, 21 populations of San Diego sunflower, 1 population of snake cholla and 1 population of variegated dudleya. In addition, as a result of surveys conducted in the spring of 2001, approximately 71 individual Otay tarplant plants were discovered in the Policy Option 2 alignment (letter report supplement Dudek and Associates, May 23, 2001). Although the EIR does not identify impacts to 1

population of south coast salt scale, 8 populations of San Diego marsh-elder and 1 populations of San Diego barrel cactus as significant, these impacts are included as mitigation for the project includes mitigation for these species [Program EIR, subchapter 3.3, pp. 3.3-37, 3.3-39 through 3.3-40]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the Program EIR, below a level of significance.

Explanation: Disturbance of existing rare plant individuals or populations is significant due to the general decline and subsequent concern over the vitality of these species throughout the San Diego County Area. As stated in the Significance Criteria, the project would result in a significant impact if it has an substantial effect, including an indirect effect, on a rare or endangered or otherwise sensitive plant or animal species. In order to reduce these impacts to levels below significance, the mitigation measures described below and on pp. 3.3-49 through 3.3-50 in the EIR will be implemented.

Mitigation Measures: The following mitigation measures are feasible and are required as a condition of approval and are made binding on the City through these findings. [Program EIR, Subchapter 3.3, pp. 3.3-49]

- *Under the Subarea Plan* - No additional mitigation is required for covered species, since the project is considered a "planned facility" and the conservation analysis for the MSCP and Subarea Plan considered implementation of the project. Under the Subarea Plan scenario, Spring 2001 surveys for narrow endemics will be conducted to supplement the current database regarding sensitive species within the area of potential effect. A determination will be made that no more than 5% of the individuals within the area of potential effect, for each narrow endemic species, would be directly impacted by the project.

Mitigation for impacts to non-covered species will be incorporation of seed or nursery stock of those species into the preserved and/or restoration areas. As an impact-reducing mitigation measure, salvagable plant species (San Diego barrel cactus, snake cholla and variegated dudleya) will be salvaged prior to construction and installed within the preserve (it should be noted that, while impacts to San Diego barrel cactus have not been identified as significant, the City proposes to conduct salvage for this species, and it is therefore, included in this mitigation measure). Also, impacts to San Diego sunflower will be mitigated through the use of San Diego sunflower seed or container plants in the revegetation of temporary impact areas on the project site. Any narrow endemic plant species found within the final staging areas will be avoided

through the placement of construction fencing around those populations prior to construction. Indirect impacts shall be avoided through the use of Best Management Practices, including strict limitations for all construction and maintenance activities within the identified 40 foot and 20 foot corridors, respectively.

- *Without the Subarea Plan* - As an impact-reducing mitigation measure, salvagable plant species (San Diego barrel cactus, snake cholla and variegated dudleya) will be salvaged prior to construction and installed within the preserve (it should be noted that, while impacts to San Diego barrel cactus have not been identified as significant, the City proposes to conduct salvage for this species, and it is therefore, included in this mitigation measure). Also, impacts to San Diego sunflower will be mitigated through the use of San Diego sunflower seed or container plants in the revegetation temporary impact areas on the project site. Impacts to variegated dudleya and snake cholla will be mitigated through the preservation of habitat containing those species within the preserve. Any sensitive plant species found within the final staging areas will be avoided through the placement of construction fencing around those populations prior to construction. Indirect impacts shall be avoided through the use of Best Management Practices, including strict limitations for all construction and maintenance activities within the identified 40 foot and 20 foot corridors, respectively.

Significance After Mitigation: Less than Significant

Staging Areas

Significant Impact : Staging area use would result in direct impacts to 1 population of California adolphia and 1 population of San Diego sunflower. Although the EIR does not identify impacts to the population San Diego marsh-elder as significant, impacts to this population are included as mitigation for the project includes mitigation for these species [Program EIR, subchapter 3.3, pp. 3.3-37]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the Program EIR, below a level of significance.

Explanation: Disturbance of existing rare plant individuals or populations is significant due to the general decline and subsequent concern over the vitality of these species throughout the San Diego County Area. As stated in the Significance Criteria, the project would result in a significant impact if it has an substantial effect, including an indirect effect, on a rare or endangered or otherwise sensitive plant or animal species. In order to reduce these impacts to

levels below significance, the mitigation measures described below and on pp. 3.3-49 through 3.3-50 in the EIR will be implemented.

Mitigation Measures: The following mitigation measures are feasible and are required as a condition of approval and are made binding on the City through these findings. [Program EIR, Subchapter 3.3, pp. 3.3-49]

- All sensitive plant populations within staging areas shall be completely avoided

Significance After Mitigation: Less than Significant

Sensitive Animal Species

Reaches 3-8 A/B, Policy Options 1, 2, 3 and 4

Significant Impact : Development of the project would result in direct impacts to the federally listed threatened California gnatcatcher and federally listed endangered quino checkerspot butterfly. [Program EIR, subchapter 3.3, pp. 3.3-41 through 3.3-42]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the Program EIR, below a level of significance.

Explanation: Disturbance of the habitat or individuals of a federally listed endangered or threatened species (in this case the California gnatcatcher) is considered a significant impact as outlined in the Significance Standards above. Construction of the pipeline would result in direct impacts to this sensitive species as well as its habitat, a regulated resource. In order to reduce these impacts to levels below significance, the mitigation measures described below and on pp. 3.3-49 through 3.3-50 in the EIR will be implemented.

Mitigation Measures: The following mitigation measures are feasible and are required as a condition of approval and are made binding on the City through these findings. [Program EIR, Subchapter 3.3, pp. 3.3-50 to 3.3-51]

- *Under the Subarea Plan* - No additional mitigation is required for covered species, since the project is considered a “planned facility” and the conservation analysis for the MSCP and Subarea Plan considered implementation of the project. Under the Subarea Plan the project complies with the siting criteria identified in the Plan. In areas potentially affecting

least Bell's vireo nesting sites, noise levels will not exceed 60 CNEL during the breeding season, March 15 to September 15. In areas potentially affecting raptor and/or California gnatcatcher nesting sites, noise levels will be modified, if necessary, to prevent noise from negatively impacting the breeding success of the pair during the breeding season (December 1 to May 31 for raptors and February 15 to August 15 for California gnatcatcher). The quino checkerspot butterfly is a federally listed endangered species and may not be covered by the Subarea Plan. If the quino checkerspot butterfly is included in the Subarea Plan, the project shall comply with all mitigation and monitoring for that species required by the Subarea Plan. If not, additional surveys, in accordance with federal protocol, will be required in the year that the project grading commences. If adult quino checkerspot butterflies are found, avoidance through appropriate construction techniques and facility maintenance activities shall be required. If avoidance is not possible, any impacts to the species will require separate permitting under the federal Endangered Species Act; the mitigation required under such a permit may include, but not be limited to, the purchase of additional mitigation land in an offsite location. Indirect impacts shall be avoided through the use of Best Management Practices, including strict limitations for all construction and maintenance activities within the identified 40 foot and 20 foot corridors, respectively.

- *Without the Subarea Plan* - Mitigation for the identified direct impacts can be achieved through habitat replacement, as identified in Mitigation Measure [a]. For gnatcatchers, an additional mitigation measure will be to ensure that habitat replacement areas contained a 1:1 ratio of gnatcatcher pairs. The City will be required to obtain a permit for gnatcatcher take under the federal Endangered Species Act.

For quino checkerspot butterfly, additional surveys, in accordance with federal protocol, will be required in the year that the project grading commences. If adult quino checkerspot butterflies are found, avoidance through appropriate construction techniques and facility maintenance activities shall be required. If avoidance is not possible, purchase of mitigation land in an offsite location will be required. Any impacts to the species will require separate permitting under the federal Endangered Species Act.

Nesting bird surveys will need to be conducted within 500 feet of construction areas. If listed bird species are found nesting in these areas, mitigation measures will be either to restrict construction activity during the breeding season or reduce noise level to below 60 CNEL in those areas if construction occurs during the breeding season.

Indirect impacts shall be avoided through the use of Best Management Practices, including strict limitations for all construction and maintenance activities within the identified 40 foot and 20 foot corridors, respectively.

Significant Impact : Short-term indirect impacts would occur to quino checkerspot butterfly and nesting bird species [Program EIR, subchapter 3.3, pp. 3.3-41 through 3.3-43]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the Program EIR, below a level of significance.

Explanation: Disturbance of the habitat or individuals of a federally listed endangered or threatened species (in this case the Quino checkerspot butterfly) is considered a significant impact as outlined in the Significance Standards above. Construction of the pipeline would result in short-term indirect impacts to this sensitive species as well as its habitat, a regulated resource. In order to reduce these impacts to levels below significance, the mitigation measures described below and on pp. 3.3-49 through 3.3-50 in the EIR will be implemented.

Mitigation Measures: The following mitigation measures are feasible and are required as a condition of approval and are made binding on the City through these findings. [Program EIR, Subchapter 3.3, pp. 3.3-50 to 3.3-51]

Under the Subarea Plan - No additional mitigation is required for covered species, since the project is considered a “planned facility” and the conservation analysis for the MSCP and Subarea Plan considered implementation of the project. Under the Subarea Plan the project complies with the siting criteria identified in the Plan. In areas potentially affecting least Bell’s vireo nesting sites, noise levels will not exceed 60 CNEL during the breeding season, March 15 to September 15. In areas potentially affecting raptor and/or California gnatcatcher nesting sites, noise levels will be modified, if necessary, to prevent noise from negatively impacting the breeding success of the pair during the breeding season (December 1 to May 31 for raptors and February 15 to August 15 for California gnatcatcher). The quino checkerspot butterfly is a federally listed endangered species and is not covered by the Subarea Plan. For quino checkerspot butterfly, additional surveys, in accordance with federal protocol, will be required in the year that the project grading commences. If adult quino checkerspot butterflies are found, avoidance through appropriate construction techniques and facility maintenance activities shall be required. If avoidance is not possible, any impacts to the species will require separate permitting under the federal Endangered Species Act; the mitigation required under such a permit may include, but not to be limited to, the purchase of additional mitigation land in an offsite location.

Indirect impacts shall be avoided through the use of Best Management Practices, including strict limitations for all construction and maintenance activities within the identified 40 foot and 20 foot corridors, respectively. The following measures will also be implemented to avoid impacts to quino checkerspot butterfly.

Restriction of all construction activity, east of the Hanson Aggregate Mining Facility, during the adult flight season (as announced by the U.S. Fish and Wildlife Service [USFWS]).

Restriction from large patches of dwarf plantain (*Plantago erecta*) adjacent to the project corridor during the entire year. This includes the potential staging area which contains approximately five acres of dwarf plantain and was the location of a 2001 quino checkerspot observation. These areas shall be marked via staking and flagging prior to construction; stakes and flags are to be maintained throughout construction.

- *Without the Subarea Plan* - Mitigation for the identified direct impacts can be achieved through habitat replacement, as identified in Mitigation Measure [a]. For gnatcatchers, an additional mitigation measure will be to ensure that habitat replacement areas contained a 1:1 ratio of gnatcatcher pairs. The City will be required to obtain a permit for gnatcatcher take under the federal Endangered Species Act.

For quino checkerspot butterfly, additional surveys, in accordance with federal protocol, will be required in the year that the project grading commences. If adult quino checkerspot butterflies are found, avoidance through appropriate construction techniques and facility maintenance activities shall be required. If avoidance is not possible, purchase of mitigation land in an offsite location will be required. Any impacts to the species will require separate permitting under the federal Endangered Species Act.

Nesting bird surveys will need to be conducted within 500 feet of construction areas. If listed bird species are found nesting in these areas, mitigation measures will be either to restrict construction activity during the breeding season or reduce noise level to below 60 CNEL in those areas if construction occurs during the breeding season.

Indirect impacts shall be avoided through the use of Best Management Practices, including strict limitations for all construction and maintenance activities within the identified 40 foot and 20 foot corridors, respectively. The following measures will also be implemented to avoid impacts to quino checkerspot butterfly.

Restriction of all construction activity, east of the Hanson Aggregate Mining Facility, during the adult flight season (as announced by the U.S. Fish and Wildlife Service [USFWS]).

Restriction from large patches of dwarf plantain (*Plantago erecta*) adjacent to the project corridor during the entire year. This includes the potential staging area which contains approximately five acres of dwarf plantain and was the location of a 2001 quino checkerspot observation. These areas shall be marked via staking and flagging prior to construction; stakes and flags are to be maintained throughout construction.

Significance After Mitigation: Less than Significant.

Jurisdictional Waters of the U.S.

Reaches 3-8 A/B Policy Options 1 or 3

Significant Effect: Development of the project would result in permanent impacts to 0.31 acre of wetlands and 0.04 acre of unvegetated waters of the U.S. (776 linear feet of impact). [Program EIR, subchapter 3.3, pp. 3.3-43 to 3.3-44]

Development of the project would also result in temporary impacts to 0.35 acre of wetlands and 0.04 acre of unvegetated waters of the U.S. (606 linear feet of impact). [Program EIR, subchapter 3.3, pp. 3.3-43 to 3.3-44]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the Program EIR, below a level of significance.

Explanation: The proposed project would result in the reduction of wetland habitats within the project area. Reduction of habitat for a fish, wildlife or plant species is considered a significant impact as outlined in the Significance Standards above. In order to mitigate these significant impacts to a level below significance, mitigation measures on pp. 3.3-49 to 3.3-51 and described below will be implemented.

Mitigation Measures: The following mitigation measures are feasible and are required as a condition of approval and are made binding on the City through these findings. [Program EIR, Subchapter 3.3, pp. 3.3-49 and 3.3-51]

- *With or without the Subarea Plan* - Mitigation for wetland vegetation is required as follows: For permanent impacts, wetland habitat creation, enhancement, and/or restoration of like-quality and like-functioning habitat at

a ratio of 2:1 shall be performed. For temporary impacts, onsite restoration or enhancement of the affected area at a ratio of 1:1 shall be performed.

- For unvegetated Waters of the U.S., topographic contours of all impacted areas shall be restored to pre-construction conditions. Jurisdictional waters, including wetlands, will be avoided in the staging areas through the placement of construction fencing surrounding those sensitive areas prior to construction. Separate permitting under the federal Clean Water Act for impacts to jurisdictional wetlands and Waters of the U.S. will be required.

Significance After Mitigation: Less than Significant.

Reaches 3-8 A/B Policy Options 2 or 4

Significant Impact : Development of the project would result in permanent impacts to 0.24 acre of wetlands and 0.05 acre of unvegetated waters of the U.S. (798 linear feet of impact). [Program EIR, subchapter 3.3, pp. 3.3-43 to 3.3-44]

Development of the project would also result in temporary impacts to 0.36 acre of wetlands and 0.10 acre of unvegetated waters of the U.S. (1,174.1 linear feet of impact). [Program EIR, subchapter 3.3, pp. 3.3-43 to 3.3-44]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the Program EIR, below a level of significance.

Explanation: The proposed project would result in the reduction of wetland habitats within the project area. Reduction of habitat for a fish, wildlife or plant species is considered a significant impact as outlined in the Significance Standards above. In order to mitigate these significant impacts to a level below significance, mitigation measures on pp. 3.3-49 to 3.3-51 and described below will be implemented.

Mitigation Measures: The following mitigation measures are feasible and are required as a condition of approval and are made binding on the City through these findings. [Program EIR, Subchapter 3.3, pp. 3.3-49 and 3.3-51]

- *With or without the Subarea Plan* - Mitigation for wetland vegetation is required as follows: For permanent impacts, wetland habitat creation, enhancement, and/or restoration of like-quality and like-functioning habitat at a ratio of 2:1 shall be performed. For temporary impacts, onsite restoration or enhancement of the affected area at a ratio of 1:1 shall be performed.

- For unvegetated Waters of the U.S., topographic contours of all impacted areas shall be restored to pre-construction conditions. Jurisdictional waters, including wetlands, will be avoided in the staging areas through the placement of construction fencing surrounding those sensitive areas prior to construction. Separate permitting under the federal Clean Water Act for impacts to jurisdictional wetlands and Waters of the U.S. will be required.

Significance After Mitigation: Less than Significant.

Regional Corridors and Linkages

Reaches 3-8 A/B, Policy Options 1, 2, 3, or 4

Significant impacts to regional corridors and linkages would not occur as a result of these project components.

MSCP and Chula Vista Subarea Plan Preserve Design

Reaches 3-8 A/B, Policy Options 1, 2, 3, or 4

Significant impacts to the MSCP would not occur as a result of these project components.

D. CULTURAL RESOURCES

Standards of Significance

Integrity: Integrity is the degree to which a subsurface deposit remains intact and undisturbed. If the deposits have been disturbed, then the extent to which they retain information to address important research questions must be determined.

Variability: The variability of a deposit is indicated by differences in a site's stratigraphic pattern, which reflects changes that have occurred at the site through time. Greater differences between artifacts from different levels, whether in quantity, type, or cultural affiliation, signify more dynamic site variability and a greater possibility that the site offers an opportunity to address important research questions relating to human or environmental change or continuity through time.

Age: Age refers to the placement of a deposit in a particular time sequence, which is essential to the assignment of cultural affiliation and chronology. Age is generally determined by radiocarbon dating, although the recognition of index artifacts (i.e., artifacts that are time-sensitive or culture-specific) at a site can also provide a date. If obsidian is present at the site, hydration studies can furnish relative dates for a site.

Function: Function is the role that a particular site played in the overall subsistence pattern of a group of inhabitants of an area. Assuming that the artifacts recovered from a site represent the range of activities that took place there, its function in the subsistence pattern of the occupants can be defined. The analysis of an assemblage should provide evidence of site activities. When this information is compared to information from other sites in the area, research questions that focus on intersite relationships and catchment theories can be addressed.

Reaches 3-9 A/B Policy Options 1, 2, 3 or 4

Significant Impact : Undetected buried portions of sites may be indirectly affected during construction [Program EIR, subchapter 3.4, pp. 3.4-15 and 3.2-16]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the Program EIR, below a level of significance.

Explanation: The project may impact the integrity of unknown cultural resources. Therefore due to the fact that impacts to these resources are somewhat unknown, a significant impact would occur. In order to prevent significant impacts from occurring to these resources should they be encountered, mitigation measures outlined on pp. 3.4-17 of the EIR and outlined below will be implemented.

Mitigation Measures: The following mitigation measures are feasible and are required as a condition of approval and are made binding on the City through these findings. [Program EIR, Subchapter 3.4, pp. 3.4-17]

- Monitoring of all trenching and clearing activities during the pipeline construction by a certified Archeologist;
- In the event that any undetected elements of the sites are encountered, construction shall be halted at that location until the discovery can be evaluated and mitigation measures implemented to reduce the significance of impacts to a less than significant level. The City of Chula Vista's Mitigation monitor will be notified following the suspension of work and, prior to any action, in order to ensure that proper procedures are followed;
- Any activities related to the proposed project within the location of SDI-12,809 will require boundary markers restricting access to a significant archeological site located to the immediate north of the APE in this area. In addition, a temporary barrier fence will be erected at the northern edge of the

pipeline construction corridor to ensure that no encroachment into the sensitive portions of the site would result

Significance After Mitigation: Less than Significant.

E. GEOLOGY AND SOILS

Standards of Significance

- The project will result in exposure of people or structures to major geologic or soils hazards.

Reaches 3-9 A/B Policy Options 1, 2, 3, or 4

Significant Impact : Alteration of the existing structure of potentially unstable soils [Program EIR, subchapter 3.5, pp. 3.5-10]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the Program EIR, below a level of significance.

Explanation: The alteration of the existing structure of unstable soils could result in a hazard to humans, existing structures or the proposed project. As stated in the Significance Standards, this would constitute a significant impact. In order to reduce this impact to a level below significance, the mitigation measures outlined on pp. 3.5-12 to 3.5-13 in the EIR and outlined below will be implemented.

Mitigation Measures: The following mitigation measures are feasible and are required as a condition of approval and are made binding on the City through these findings. [Program EIR, Subchapter 3.5, pp. 3.5-12 to 3.5-13]

- Removal depths shall be evaluated by a qualified geotechnical consultant during excavation. Significant removals of compressible material are not anticipated, and shall generally be limited to within 2 to 3 feet of the bottom of the proposed sewer line. Compressible soils beneath the proposed sewer alignment shall be removed to a minimum depth of 2 feet below the bottom of the proposed sewer line. The lower excavation level shall be overlain with Mirafi 600x (or equivalent). Mirafi 600x is a type of fabric utilized for pipeline trench lining in order to provide for long-term trench stability.

Excess soil shall be replaced with 2 feet of crushed aggregate prior to additional fill placement or construction of sewer improvements.

- Dewatering will increase the overburden pressure resulting in unwanted settlement if it is done for wide areas. Due to the level of groundwater existing above the proposed inlet elevation, dewatering methods near the western portion of the alignment will consist of a conventional well-point system.
- In areas where loose, saturated soils conditions are present, sections of pipe foundations and pipe zones shall be fitted with stabilized fabric.
- Finer grain material shall be separated from open-grade rock around pipeline structures or within any portion of trench backfill. This will occur through the installation of filter fabric to prevent piping and settlement.
- Vibratory shoring installation or removal methods shall be avoided within areas currently supporting existing infrastructure improvements. If vibratory methods are necessary, a settlement analysis and/or settlement monitoring of the pipeline or adjacent ground is required. If this method is necessary, settlement monitoring of adjacent sidewalks and structures shall be evaluated for shoring performance success.

Significance After Mitigation: Less than Significant.

Significant Impact : Heavy ripping and/or the use of heavy-duty earthwork equipment may expose people or structures to an excavation hazard. [Program EIR, subchapter 3.5, pp. 3.5-11]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the Program EIR, below a level of significance.

Explanation: The use of heavy ripping and/or the use of heavy-duty earthwork equipment may expose people to geologic hazards due to exposure of trenches, or exposure to unstable rock or earthen material. As outlined in the Significance Standards, exposure of people to potential geologic hazards constitutes a significant impact. In order to reduce this potential impact to a level below significance, the mitigation measure outlined on pp. 3.5-13 of the EIR and outlined below will be implemented.

Mitigation Measure: The following mitigation measure is feasible and is required as a condition of approval and is made binding on the City through these findings. [Program EIR, Subchapter 3.5, pp. 3.5-13]

- In order to address excavations associated with rippability of the pipeline alignment, a rippability study shall be performed. This study will outline detailed rippability of each geologic unit within the study area. A rippability study may include a seismic refraction survey and/or trackhoe excavation. If the results of the rippability study or conditions discovered in the field during construction require additional disturbance beyond the 40-foot construction corridor width, additional environmental reviews of the area proposed to be disturbed must be conducted.

Significance After Mitigation: Less than Significant.

Significant Impact : Caving of loose and/or saturated artificial fill and alluvium may present a hazard to construction workers within and around pipeline trenches. [Program EIR, subchapter 3.5, pp. 3.5-11]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the Program EIR, below a level of significance.

Explanation: Caving of loose and/or saturated artificial fill and alluvium may present hazards to construction workers as these materials are prone to give way under weight of vehicles or people. As stated in the Significance Standards, exposure of people to potential geologic or soil hazards is considered a significant impact. In order to reduce the potential for this significant impact to occur, the mitigation measure outlined on pp. 3.5-12 of the EIR and outlined below shall occur.

Mitigation Measure: The following mitigation measure is feasible and is required as a condition of approval and are made binding on the City through these findings. [Program EIR, Subchapter 3.5, pp. 3.5-13]

- All excavation shall comply with OSHA requirements. Special care shall be taken for excavation near existing improvements and to verify that the integrity of the existing improvements will not be impacted. For shored excavations, a qualified geotechnical consultant shall review and approve the contractors proposed shoring design. Shoring and excavation design in the area of Interstate 805 and Interstate 5 shall be performed in accordance with the Caltrans Trenching and Shoring Manual.

Significance After Mitigation: Less than Significant.

Significant Impact : Pipeline jacking beneath Interstate 5 may result in passive earth pressure at the location of the thrust block which could result in lateral support. [Program EIR, subchapter 3.5, pp. 3.5-11]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the Program EIR, below a level of significance.

Explanation: Pipe jacking beneath Interstate 5 would result in potential earth pressure at the location of the thrust block. This pressure could result in structure integrity issues for Interstate 5. As stated in the Significance Standards, exposure of structures to major geologic or soil hazards is considered a significant impact. In order to prevent this significant impact from occurring, the mitigation measure outlined in pp. 3.5-14 and described below shall occur.

Mitigation Measure: The following mitigation measure is feasible and is required as a condition of approval and are made binding on the City through these findings. [Program EIR, Subchapter 3.5, pp. 3.5-14]

- During pipe jacking underneath I-5, a safety factor of two shall be included in the design of any thrust blocks. In addition, pipe jacking beneath the existing railroad spur shall be performed in accordance with regional and local Caltrans and MTDB standards and requirements.

Significance After Mitigation: Less than Significance.

Significant Impact: Redirection of groundwater resources to surface waters (dewatering). [Program EIR, subchapter 3.5, pp. 3.5-11]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the Program EIR, below a level of significance.

Explanation: Redirection of groundwater resources to surface waters could pose a potential threat to humans or structures as the structure and/or stability of the groundwater plume may be altered. This may cause weakening of the surface area around the underground resource as well as potential soil erosion issues near the point of discharge. As stated in the Significance Standards, potential geologic or soil hazards are considered significant. In order to reduce these potential

impacts to levels below significance, mitigation measures outlined on pp. 3.6-7 and described below shall occur.

Mitigation Measures: The following mitigation measures are feasible and are required as a condition of approval and are made binding on the City through these findings. [Program EIR, Subchapter 3.5, pp. 3.5-13 and pp. 3.6-17]

- Dewatering shall be conducted in accordance with standard regulations of the RWQCB. A permit to discharge water from dewatering activities will be required.
- In order to comply with existing regulations surrounding groundwater discharge, an NPDES General Storm Water Permit Program Permit shall be obtained by the City. This permit will require the City to outline all Best Management Practices (BMPs) planned in order to reduce potential water quality impacts. These BMPs are implemented through site specific implementation of a Storm Water Pollution Prevention Program (SWPPP) and is monitored by the Regional Water Quality Control Board.

Significance After Mitigation: Less than Significant.

Significant Effect: Seepage of ground or surface water into an exposed trench [Program EIR, Subchapter 3.5, pp. 3.5-11 to 3.5-12]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the Program EIR, below a level of significance.

Explanation: Seepage of ground or surface water into an exposed trench may present water quality issues or jeopardize the integrity of the trench. Exposure of people or structures to potential geologic or soil hazards such as that described above is considered to be a significant impact. In order to reduce potential impacts to levels below significance, the mitigation measure outlined on pp. 3.5-14 in the EIR and described below will occur.

Mitigation Measure: The following mitigation measure is feasible and is required as a condition of approval and is made binding on the City through these findings. [Program EIR, Subchapter 3.5, pp. 3.5-14]

- In order to control seepage into exposed trench areas, tight sheathing will be located within the trench. If this method is not possible, pumping by way of a sump located at the base of the trench will be employed. A combination of both methods may be necessary in some alignment locations.

Significance After Mitigation: Less than Significant.

F. HYDROLOGY AND WATER QUALITY

Standards of Significance

- The project will result in a violation of water quality standards or waste discharge requirements as set by the San Diego Regional Water Quality Control Board;
- The project will substantially deplete groundwater supplies or interfere substantially with groundwater recharge;
- The project will substantially alter the existing drainage pattern of the site or area which would result in substantial erosion or siltation on or off site;
- The project will substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site;
- The project will create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide additional sources of polluted runoff;
- The project will result in alteration of an existing 100-year floodplain or flood regime;
- The project will subject existing or proposed people or structures to flooding due to alteration or disturbance to an existing floodplain;
- The project will potentially degrade the water quality associated with a sensitive wetland or hydrologic resource; and
- The project will substantially degrade water quality.

Reaches 3-9 A/B Policy Options 1, 2, 3, or 4

Significant Impact : Exposure of the pipeline to scour effects as a result of its location within a delineated 100-year floodplain. [Program EIR, subchapter 3.6, pp. 3.6-13]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the Program EIR, below a level of significance.

Explanation: Construction of the pipeline within a delineated 100-year floodplain leaves the potential for scour impacts to this infrastructure facility. As

outlined in the Significance Standards, subjecting an existing or proposed structure to flooding hazards due to alteration or disturbance to an existing floodplain constitutes a significant impact. In order to reduce this potentially significant impact from occurring, the mitigation measure outlined on pp. 3.6-16 of the EIR and described below will occur.

Mitigation Measure: The following mitigation measure is feasible and is required as a condition of approval and are made binding on the City through these findings. [Program EIR, Subchapter 3.6, pp. 3.6-16]

- A scour analysis of the Otay River and Salt Creek shall be completed during final design to determine potential pipeline washout dangers commonly associated with major flooding events. Subsequent to this analysis, design of the pipeline and construction specifications shall include recommendations from the report to ensure that potential impacts from scouring do not impact the integrity of the pipeline.

Significance After Mitigation: Less than Significant.

Significant Impact : Exposure of surface water resources to groundwater during trench and construction area dewatering. [Program EIR, subchapter 3.6, pp. 3.6-14]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the Program EIR, below a level of significance.

Explanation: Exposure of surface water resources to groundwater as a result of trench construction and dewatering could degrade local surface water quality in addition to potentially degrading water quality of sensitive aquatic resources such as wetlands. As outlined in the Significance Standards, degradation of water quality as well as potential degradation of sensitive aquatic resource water quality is considered a significant impact. In order to reduce these potential impacts below a level of significance, the mitigation measure outlined on pp. 3.6-17 of the EIR and outlined below will occur.

Mitigation Measure: The following mitigation measure is feasible and is required as a condition of approval and is made binding on the City through these findings. [Program EIR, subchapter 3.6, pp. 3.6-17]

- Dewatering shall be conducted in accordance with standard regulations of the RWQCB. A permit to discharge water from dewatering activities will be required.

Significance After Mitigation: Less than Significant.

Significant Impact : The potential to violate existing water quality standards and guidelines [Program EIR, subchapter 3.6, pp. 3.6-14]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the Program EIR, below a level of significance.

Explanation: The proposed project could violate existing water quality control plans through the discharge of groundwater resources as well as construction within or near natural, sensitive waterways. As outlined in the Significance Standards, violation of water quality standards or waste discharge requirements set by the Regional Water Quality Control Board is considered a significant impact. In order to reduce potential impacts to levels below significance, the mitigation measure listed on pp. 3.6-17 of the EIR and described below will be implemented.

Mitigation Measure: The following mitigation measure is feasible and is required as a condition of approval and is made binding on the City through these findings. [Program EIR, subchapter 3.6, pp. 3.6-17]

- In order to comply with existing regulations surrounding groundwater discharge, an NPDES General Storm Water Permit Program Permit shall be obtained by the City. This permit will require the City to outline all Best Management Practices (BMPs) planned in order to reduce potential water quality impacts. These BMPs are implemented through site specific implementation of a Storm Water Pollution Prevention Program (SWPPP) and is monitored by the Regional Water Quality Control Board.

Significance After Mitigation: Less than Significant.

Significant Impact : Potential turbidity effects to surface waters as a result of exposed trench soils. [Program EIR, subchapter 3.6, pp. 3.6-14]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the Program EIR, below a level of significance.

Explanation: Should weather events occur during construction, exposed trench soils may wash away and result in turbidity in local waterways. As outlined in the Significance Standards, substantially altering the existing drainage pattern of a

site or area which would result in substantial erosion or siltation on or off site would constitute a significant impact. In order to reduce potential impacts to below a level of significance, the mitigation measure described on pp. 3.6-17 of the EIR and outlined below shall occur.

Mitigation Measure: The following mitigation measure is feasible and is required as a condition of approval and is made binding on the City through these findings. [Program EIR, subchapter 3.6, pp. 3.6-17]

- During construction, material stockpiles shall be placed such that they cause minimal interference with on-site drainage patterns. In case of rain, exposed stockpiles shall be covered with impermeable materials such as tarps in order to allow drainage to occur without excessive sediment loading.

Significance After Mitigation: Less than Significant.

Significant Impact : Potential impacts to South San Diego Bay as a result of construction run-off and construction equipment impacts. [Program EIR, subchapter 3.6, pp. 3.6-17].

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the Program EIR, below a level of significance.

Explanation: Due to the exposure of soils during construction, run-off from the project construction site could result in downstream water quality impacts. As stated in the Significance Standards, affecting the water quality of a sensitive wetland or hydrologic resources such as South San Diego Bay would result in significant impacts. In order to reduce these impacts to a level below significance, the mitigation measure described on pp. 3.6-17 of the EIR and described below shall occur.

Mitigation Measure: The following mitigation measure is feasible and is required as a condition of approval and is made binding on the City through these findings. [Program EIR, subchapter 3.6, pp. 3.6-17]

- In order to minimize potential impacts to sensitive hydrologic resources associated with the South San Diego Bay, all equipment required for both construction, general operation and periodic maintenance shall be refueled or maintained within existing City of Chula Vista or San Diego street areas or designated staging areas. Best Management Practices to contain accidental spills of hazardous materials shall be utilized when performing maintenance or refueling. All stationary equipment, such as motors, pumps, generators, and

site or area which would result in substantial erosion or siltation on or off site would constitute a significant impact. In order to reduce potential impacts to below a level of significance, the mitigation measure described on pp. 3.6-17 of the EIR and outlined below shall occur.

Mitigation Measure: The following mitigation measure is feasible and is required as a condition of approval and is made binding on the City through these findings. [Program EIR, subchapter 3.6, pp. 3.6-17]

- During construction, material stockpiles shall be placed such that they cause minimal interference with on-site drainage patterns. In case of rain, exposed stockpiles shall be covered with impermeable materials such as tarps in order to allow drainage to occur without excessive sediment loading.

Significance After Mitigation: Less than Significant.

Significant Impact : Potential impacts to South San Diego Bay as a result of construction run-off and construction equipment impacts. [Program EIR, subchapter 3.6, pp. 3.6-17].

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the Program EIR, below a level of significance.

Explanation: Due to the exposure of soils during construction, run-off from the project construction site could result in downstream water quality impacts. As stated in the Significance Standards, affecting the water quality of a sensitive wetland or hydrologic resources such as South San Diego Bay would result in significant impacts. In order to reduce these impacts to a level below significance, the mitigation measure described on pp. 3.6-17 of the EIR and described below shall occur.

Mitigation Measure: The following mitigation measure is feasible and is required as a condition of approval and is made binding on the City through these findings. [Program EIR, subchapter 3.6, pp. 3.6-17]

- In order to minimize potential impacts to sensitive hydrologic resources associated with the South San Diego Bay, all equipment required for both construction, general operation and periodic maintenance shall be refueled or maintained within existing City of Chula Vista or San Diego street areas or designated staging areas. Best Management Practices to contain accidental spills of hazardous materials shall be utilized when performing maintenance or refueling. All stationary equipment, such as motors, pumps, generators, and

welders, shall be stored on existing city streets or designated staging areas. When equipment is being utilized along the pipeline alignment, drip pans shall be placed under all potential discharge conduits or leaks.

Significance After Mitigation: Less than Significant.

G. LAND USE AND PLANNING

Standards of Significance

- The project would have a direct land use conflict resulting in the need to relocate existing residences or businesses;
- The project would result in a direct conflict with existing or planned land uses;
- The project would result in the removal of existing community elements (e.g., trees) that have been identified by the community as important in defining community character;
- The project would conflict with adopted land use plans and policies;
- The project would temporarily substantially impede regular activities associated with an existing land use. This would include blocking vehicular access to a land use for more than four hours in a day.

Reaches 3-8 A/B Policy Options 1, 2, 3 or 4

Significant Impact : Temporary detours and limitations to access to quarry operations. [Program EIR, subchapter 3.7, pp. 3.7-17].

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the Program EIR, below a level of significance.

Explanation: Temporarily impacting accessibility to business would occur during project construction. As outlined in the Significance Standards, temporary restriction from a land use is considered a significant impact. In order to reduce potential impacts to land use accessibility, the mitigation measure outlined on pp. 3.9-10 through 3.9-11 and described below will occur.

Mitigation Measure: The following mitigation measure is feasible and is required as a condition of approval and is made binding on the City through these findings. [Program EIR, subchapter 3.6, pp. 3.9-10 through 3.9-11]

- A traffic control plan shall be prepared prior to construction and implemented for all affected roadways. The traffic control plan will show all signage, striping, delineate detours, flagging operations, and any other procedures which will be used during construction to guide motorists safely through the construction zone and allow for a minimum of one lane of travel. The traffic control plan will also include provisions for coordinating with local emergency service providers regarding construction times and locations of lane closures as well as specifications for bicycle lane safety.

The Traffic Control Plan will be prepared in accordance with the City of Chula Vista's traffic control guidelines and will be prepared to ensure that access will be maintained to individual properties and businesses, and that emergency access will not be restricted. Additionally, the Plan will ensure that congestion and delay of traffic resulting from project construction are not substantially increased and will be of a short-term nature.

The limits of construction work area(s) and suggested alternate traffic routes for through traffic will be published in a local newspaper periodically throughout the construction period. In addition, the construction contractor shall provide not less than a 2-week written notice prior to the start of construction by mailing to owners/occupants along streets to be impacted during construction.

During construction, the City of Chula Vista will ensure that continuous, unobstructed, safe and adequate pedestrian and vehicular access to and from public facilities such as public utility stations and community centers will be provided. If normal access to these facilities is blocked by construction alternative access shall be provided. Should this occur, the City of Chula Vista will coordinate with each facility's administrators in preparing a plan for alternative access.

During construction, the City of Chula Vista shall ensure that continuous, unobstructed, safe and adequate pedestrian and vehicular access to commercial/ industrial establishments, to include areas where mining operations are being conducted, during regular business hours occurs. Specific attention to the wide turning radius of large trucks associated with the Otay Landfill and other commercial/ industrial facilities along Main Street shall be accommodated. If normal access to business establishments is blocked, alternative access shall be provided. The City of Chula Vista shall coordinate with the businesses in preparing a plan for alternative access.

During construction, the City of Chula Vista shall maintain continuous vehicular and pedestrian access to residential driveways from the public street to the private property line, except where necessary construction precludes such continuous access for reasonable periods of time. For example, when the pipeline is initially being excavated, access to individual driveways may be closed during the course of a workday. Access shall be reestablished at the end of the workday. If a driveway needs to be closed or interfered with as described above, the construction contractor shall notify the owner or occupant of the closure of the driveway at least five working days prior to the closure.

Methods to maintain safe, vehicular and pedestrian access include the installation of temporary bridge or steel plates to cross over unfilled excavations. Whenever sidewalks or roadways are removed for construction, the contractor shall place temporary sidewalks or roadways promptly after backfilling until the final restoration has been made.

The traffic control plan shall include provisions to ensure that the construction contractor's work in any public street does not interfere unnecessarily with the work of other agencies such as emergency services providers, mail delivery, school buses, waste services, or Chula Vista Transit Buses.

Significance After Mitigation: Less than Significant.

Reaches 9 A/B

Significant Impact : Temporary detours and limitations to access to quarry operations. [Program EIR, subchapter 3.7, pp. 3.7-17 through 3.7-18].

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the Program EIR, below a level of significance.

Explanation: Temporarily impacting accessibility to business would occur during project construction. As outlined in the Significance Standards, temporary restriction from a land use is considered a significant impact. In order to reduce potential impacts to land use accessibility, the mitigation measure outlined on pp. 3.9-10 through 3.9-11 and described below will occur.

Mitigation Measure: The following mitigation measure is feasible and is required as a condition of approval and are made binding on the City through these findings. [Program EIR, subchapter 3.6, pp. 3.9-10 through 3.9-11]

- A traffic control plan shall be prepared prior to construction and implemented for all affected roadways. The traffic control plan will show all signage, striping, delineate detours, flagging operations, and any other procedures which will be used during construction to guide motorists safely through the construction zone and allow for a minimum of one lane of travel. The traffic control plan will also include provisions for coordinating with local emergency service providers regarding construction times and locations of lane closures as well as specifications for bicycle lane safety.

The Traffic Control Plan will be prepared in accordance with the City of Chula Vista's traffic control guidelines and will be prepared to ensure that access will be maintained to individual properties and businesses, and that emergency access will not be restricted. Additionally, the Plan will ensure that congestion and delay of traffic resulting from project construction are not substantially increased and will be of a short-term nature.

The limits of construction work area(s) and suggested alternate traffic routes for through traffic will be published in a local newspaper periodically throughout the construction period. In addition, the construction contractor shall provide not less than a 2-week written notice prior to the start of construction by mailing to owners/occupants along streets to be impacted during construction.

During construction, the City of Chula Vista will ensure that continuous, unobstructed, safe and adequate pedestrian and vehicular access to and from public facilities such as public utility stations and community centers will be provided. If normal access to these facilities is blocked by construction alternative access shall be provided. Should this occur, the City of Chula Vista will coordinate with each facility's administrators in preparing a plan for alternative access.

During construction, the City of Chula Vista shall ensure that continuous, unobstructed, safe and adequate pedestrian and vehicular access to commercial/ industrial establishments, to include areas where mining operations are being conducted, during regular business hours occurs. Specific attention to the wide turning radius of large trucks associated with the Otay Landfill and other commercial/ industrial facilities along Main Street shall be accommodated. If normal access to business establishments is blocked, alternative access shall be provided. The City of Chula Vista shall coordinate with the businesses in preparing a plan for alternative access.

During construction, the City of Chula Vista shall maintain continuous vehicular and pedestrian access to residential driveways from the public street to the private property line, except where necessary construction precludes

such continuous access for reasonable periods of time. For example, when the pipeline is initially being excavated, access to individual driveways may be closed during the course of a workday. Access shall be reestablished at the end of the workday. If a driveway needs to be closed or interfered with as described above, the construction contractor shall notify the owner or occupant of the closure of the driveway at least five working days prior to the closure.

Methods to maintain safe, vehicular and pedestrian access include the installation of temporary bridge or steel plates to cross over unfilled excavations. Whenever sidewalks or roadways are removed for construction, the contractor shall place temporary sidewalks or roadways promptly after backfilling until the final restoration has been made.

The traffic control plan shall include provisions to ensure that the construction contractor's work in any public street does not interfere unnecessarily with the work of other agencies such as emergency services providers, mail delivery, school buses, waste services, or Chula Vista Transit Buses.

Significance After Mitigation: Less than Significant.

Significant Impact : Blocking vehicular access to an existing land use including commercial, industrial, residential and public facilities for more than four hours in a day [Program EIR, subchapter 3.7, pp. 3.7-18 through 3.7-19]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the Program EIR, below a level of significance.

Explanation: Temporarily impacting accessibility to businesses and/or residences would occur during project construction. As outlined in the Significance Standards, temporary restriction from a land use is considered a significant impact. In order to reduce potential impacts to land use accessibility, the mitigation measure outlined on pp. 3.9-10 through 3.9-11 and described below will occur.

Mitigation Measure: The following mitigation measure is feasible and is required as a condition of approval and is made binding on the City through these findings. [Program EIR, subchapter 3.6, pp. 3.9-9 through 3.9-11]

- In order to prevent an increase in congestion and delay from the Coors Amphitheatre concert loading and unloading events, facility design and placement shall be such that three eastbound lanes are available during the

concert season. This is intended to prevent additional congestion and delay from occurring during event loading (ingress). This measure will mitigate potential impacts to Main Street and I-805, since no restrictions to the eastbound lanes would result and lane configurations would be the same as under existing loading procedure. In addition, no lane closures would be allowed during loading and unloading of a concert event.

Significance After Mitigation: Less than Significant.

Significant Impact : Multiple planned projects are constructed simultaneously with the proposed project. [Program EIR, subchapter 3.7, pp. 3.7-19]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the Program EIR, below a level of significance.

Explanation: The construction of multiple projects in one area at a time can result in blocking access to land uses, causing the need to relocate existing residences or land uses, alteration of a physical arrangement of a community or conflict with adopted land use plans and/or policies. As outlined in the Significance Standards above, all of these conflicts are considered significant impacts. In order to reduce these impacts to levels below significance, the mitigation measure outlined on pp. 3.7-20 of the EIR and described below would be implemented.

Mitigation Measure: The following mitigation measure is feasible and is required as a condition of approval and is made binding on the City through these findings. [Program EIR, subchapter 3.7, 3. 3.7-20]

- During project design, the City of Chula Vista will coordinate with each jurisdiction affected by the project to determine the exact limits of project construction. This coordination effort is intended to prevent any conflicts resulting from other projects occurring within the direct vicinity of the project and within the same time period.

Coordination with the following jurisdictional departments will occur in conjunction with the proposed project:

- City of San Diego Traffic Engineering
- City of Chula Vista Engineering
- MTDB

- Caltrans
- Project construction within a freeway right-of-way will require a licensing agreement between the City of Chula Vista and Caltrans. This agreement will delineate all details such as tunneling, specifications for pipeline depth below surface and encasement requirements. This document will also discuss safety issues such as the use of a flag crew during work within the right-of-way.

Significance After Mitigation: Less than Significant.

Significant Impact : Potential impacts to existing land uses and public agency right-of-ways. [Program EIR, subchapter 3.7, pp. 3.7-20]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the Program EIR, below a level of significance.

Explanation: Potential impacts to existing land uses including public rights of way would result in a significant impact. As outlined in the Significance Standards outlined above, direct conflict with existing or planned land uses would result in a significant impact. In order to reduce potential impacts to a level below significance, the mitigation measure outlined on pp. 3.7-20 of the EIR and described below would occur.

Mitigation Measure: The following mitigation measure is feasible and is required as a condition of approval and is made binding on the City through these findings. [Program EIR, subchapter 3.7, pp. 3.7-20]

- During project design, the City of Chula Vista will coordinate with each jurisdiction affected by the project to determine the exact limits of project construction. This coordination effort is intended to prevent any conflicts resulting from other projects occurring within the direct vicinity of the project and within the same time period.

Coordination with the following jurisdictional departments will occur in conjunction with the proposed project:

- City of San Diego Traffic Engineering
- City of Chula Vista Engineering
- MTDB

- Caltrans
- Project construction within a freeway right-of-way will require a licensing agreement between the City of Chula Vista and Caltrans. This agreement will delineate all details such as tunneling, specifications for pipeline depth below surface and encasement requirements. This document will also discuss safety issues such as the use of a flag crew during work within the right-of-way.

Significance After Mitigation: Less than Significant.

H. NOISE

Significant impacts as a result of noise were not identified.

I. TRAFFIC/TRANSPORTATION

Standards of Significance

- The project would close or alter access to an individual property or public facility;
- The project would close a road without sufficient detours;
- The project would change traffic patterns in such a way that congestion and delay are substantially increased or emergency access is restricted (e.g., fire, police, ambulance) on street segments or at intersections.
- The project would cause a significant safety hazard;
- The project would subjecting any portion of roadway to a significant increase in construction traffic;
- The project would interfere with planned roadway improvements.

Reaches 3-8 A/B Policy Options 1, 2, 3, or 4

Significant Impact: Loss of access to a quarry operation. [Program EIR, subchapter 3.9, pp. 3.9-8]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the Program EIR, below a level of significance.

Explanation: Temporarily impacting accessibility to a business would occur during project construction. As outlined in the Significance Standards, temporary restriction from a land use is considered a significant impact. In order to reduce potential impacts to land use accessibility, the mitigation measure outlined on pp. 3.9-10 through 3.9-11 and described below will occur.

Mitigation Measure: The following mitigation measure is feasible and is required as a condition of approval and is made binding on the City through these findings. [Program EIR, subchapter 3.9, pp. 3.9-10 through 3.9-11]

- A traffic control plan shall be prepared prior to construction and implemented for all affected roadways. The traffic control plan will show all signage, striping, delineate detours, flagging operations, and any other procedures which will be used during construction to guide motorists safely through the construction zone and allow for a minimum of one lane of travel. The traffic control plan will also include provisions for coordinating with local emergency service providers regarding construction times and locations of lane closures as well as specifications for bicycle lane safety.

The Traffic Control Plan will be prepared in accordance with the City of Chula Vista's traffic control guidelines and will be prepared to ensure that access will be maintained to individual properties and businesses, and that emergency access will not be restricted. Additionally, the Plan will ensure that congestion and delay of traffic resulting from project construction are not substantially increased and will be of a short-term nature.

The limits of construction work area(s) and suggested alternate traffic routes for through traffic will be published in a local newspaper periodically throughout the construction period. In addition, the construction contractor shall provide not less than a 2-week written notice prior to the start of construction by mailing to owners/occupants along streets to be impacted during construction.

During construction, the City of Chula Vista will ensure that continuous, unobstructed, safe and adequate pedestrian and vehicular access to and from public facilities such as public utility stations and community centers will be provided. If normal access to these facilities is blocked by construction alternative access shall be provided. Should this occur, the City of Chula Vista will coordinate with each facility's administrators in preparing a plan for alternative access.

During construction, the City of Chula Vista shall ensure that continuous, unobstructed, safe and adequate pedestrian and vehicular access to commercial/ industrial establishments, to include areas where mining

operations are being conducted, during regular business hours occurs. Specific attention to the wide turning radius of large trucks associated with the Otay Landfill and other commercial/ industrial facilities along Main Street shall be accommodated. If normal access to business establishments is blocked, alternative access shall be provided. The City of Chula Vista shall coordinate with the businesses in preparing a plan for alternative access.

During construction, the City of Chula Vista shall maintain continuous vehicular and pedestrian access to residential driveways from the public street to the private property line, except where necessary construction precludes such continuous access for reasonable periods of time. For example, when the pipeline is initially being excavated, access to individual driveways may be closed during the course of a workday. Access shall be reestablished at the end of the workday. If a driveway needs to be closed or interfered with as described above, the construction contractor shall notify the owner or occupant of the closure of the driveway at least five working days prior to the closure.

Methods to maintain safe, vehicular and pedestrian access include the installation of temporary bridge or steel plates to cross over unfilled excavations. Whenever sidewalks or roadways are removed for construction, the contractor shall place temporary sidewalks or roadways promptly after backfilling until the final restoration has been made.

The traffic control plan shall include provisions to ensure that the construction contractor's work in any public street does not interfere unnecessarily with the work of other agencies such as emergency services providers, mail delivery, school buses, waste services, or Chula Vista Transit Buses.

Significance After Mitigation: Less than Significant

Reaches 9 A/B

Significant Impact : Short term impacts to Main Street and Otay Valley Road including traffic delays, partial road closures and traffic congestion and associated hazards. [Program EIR, subchapter 3.9, pp. 3.9-8 through 3.9-9]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the Program EIR, below a level of significance.

Explanation: Short term impacts to Main Street and Otay Valley Road could result in road closures , changes in traffic patterns or present safety hazards. As

stated in the Significance Standards above, closing a roadway, adjusting traffic patterns or introducing a potential roadway hazard all qualify as significant impacts. In order to reduce the potential for significant impacts to occur, the mitigation measure outlined on pp. 3.9-10 through 3.9-11 of the EIR and described below will occur.

Mitigation Measure: The following mitigation measure is feasible and is required as a condition of approval and is made binding on the City through these findings. [Program EIR, subchapter 3.9, pp. 3.9-10 through 3.9-11]

- A traffic control plan shall be prepared prior to construction and implemented for all affected roadways. The traffic control plan will show all signage, striping, delineate detours, flagging operations, and any other procedures which will be used during construction to guide motorists safely through the construction zone and allow for a minimum of one lane of travel. The traffic control plan will also include provisions for coordinating with local emergency service providers regarding construction times and locations of lane closures as well as specifications for bicycle lane safety.

The Traffic Control Plan will be prepared in accordance with the City of Chula Vista's traffic control guidelines and will be prepared to ensure that access will be maintained to individual properties and businesses, and that emergency access will not be restricted. Additionally, the Plan will ensure that congestion and delay of traffic resulting from project construction are not substantially increased and will be of a short-term nature.

The limits of construction work area(s) and suggested alternate traffic routes for through traffic will be published in a local newspaper periodically throughout the construction period. In addition, the construction contractor shall provide not less than a 2-week written notice prior to the start of construction by mailing to owners/occupants along streets to be impacted during construction.

During construction, the City of Chula Vista will ensure that continuous, unobstructed, safe and adequate pedestrian and vehicular access to and from public facilities such as public utility stations and community centers will be provided. If normal access to these facilities is blocked by construction alternative access shall be provided. Should this occur, the City of Chula Vista will coordinate with each facility's administrators in preparing a plan for alternative access.

During construction, the City of Chula Vista shall ensure that continuous, unobstructed, safe and adequate pedestrian and vehicular access to commercial/ industrial establishments, to include areas where mining

operations are being conducted, during regular business hours occurs. Specific attention to the wide turning radius of large trucks associated with the Otay Landfill and other commercial/ industrial facilities along Main Street shall be accommodated. If normal access to business establishments is blocked, alternative access shall be provided. The City of Chula Vista shall coordinate with the businesses in preparing a plan for alternative access.

During construction, the City of Chula Vista shall maintain continuous vehicular and pedestrian access to residential driveways from the public street to the private property line, except where necessary construction precludes such continuous access for reasonable periods of time. For example, when the pipeline is initially being excavated, access to individual driveways may be closed during the course of a workday. Access shall be reestablished at the end of the workday. If a driveway needs to be closed or interfered with as described above, the construction contractor shall notify the owner or occupant of the closure of the driveway at least five working days prior to the closure.

Methods to maintain safe, vehicular and pedestrian access include the installation of temporary bridge or steel plates to cross over unfilled excavations. Whenever sidewalks or roadways are removed for construction, the contractor shall place temporary sidewalks or roadways promptly after backfilling until the final restoration has been made.

The traffic control plan shall include provisions to ensure that the construction contractor's work in any public street does not interfere unnecessarily with the work of other agencies such as emergency services providers, mail delivery, school buses, waste services, or Chula Vista Transit Buses.

Significance After Mitigation: Less than Significant.

Significant Impact : Encroachment within the right-of-way of the San Ysidro Trolley line, railroad freight line spur tracks and Interstate 5, 805 and potentially SR125 should right-of-way of this future facility be acquired prior to pipeline construction. [Program EIR, subchapter 3.9, pp. 3.9-8 through 3.9-9]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the Program EIR, below a level of significance.

Explanation: Construction of the project within existing rights-of-way of other federal, state or local agencies could potentially alter the access to an existing property or facility or subject the subject roadway to an increase in construction

traffic and hazards. As outlined in the Significance Standards, impacting an existing public facility or subjecting a roadway to construction safety hazards would result in a significant impact. In order to reduce potential impacts to levels below significance, the mitigation measure outlined on pp. 3.9-9 through 3.9-11 of the EIR and described below shall occur.

Mitigation Measure: The following mitigation measure is feasible and is required as a condition of approval and is made binding on the City through these findings. [Program EIR, subchapter 3.9, pp. 3.9-9 through 3.9-11]

- The City of Chula Vista will obtain an encroachment permit from respective local and state authorities, as required prior to the commencement of the construction phase. This process will include submittal of project plans, review of plans by the respective authorities, possible revisions of the plans relative to concerns brought forth by the issuing agency and finally, issuance of the respective permit. Potential permitting agencies include Caltrans, Metropolitan Transit Development Board (MTDB), and the City of San Diego.
- During project design, the City of Chula Vista shall coordinate with each jurisdiction, as well as its own transit division which may be affected by the project to determine the exact limits of project construction. This coordination effort shall be followed by specific measures to avoid conflicts resulting from other construction projects occurring within the direct vicinity of the project and within the same time period.

Coordination with the following entities will occur in conjunction with the proposed project:

- City of San Diego Traffic Engineering
- MTDB
- Caltrans
- Chula Vista Traffic Engineering

Significance After Mitigation: Less than Significant.

Significant Impact : Access to and from Coors Amphitheater during concert events. [Program EIR, subchapter 3.9, pp. 3.9-9]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will

substantially lessen or avoid the significant environmental effect as identified in the Program EIR, below a level of significance.

Explanation: The proposed project could impact planned traffic patterns associated with the Coors Amphitheater should pipeline construction on Main Street coincide with a concert event. As outlined in the Significance Standards, changing traffic patterns in such a way that congestion and delay are substantially increased is considered a significant impact. In order to reduce potential impacts to a level below significance, the mitigation measure outlined on pp. 3.9-11 of the EIR and described below shall occur.

Mitigation Measure: The following mitigation measure is feasible and is required as a condition of approval and is made binding on the City through these findings. [Program EIR, subchapter 3.9, pp. 3.9-11]

- In order to prevent an increase in congestion and delay from the Coors Amphitheatre concert loading and unloading events, facility design and placement shall be such that three eastbound lanes are available during the concert season. This is intended to prevent additional congestion and delay from occurring during event loading (ingress). This measure will mitigate potential impacts to Main Street and I-805, since no restrictions to the eastbound lanes would result and lane configurations would be the same as under existing loading procedure. In addition, no lane closures would be allowed during loading and unloading of a concert event.

Significance After Mitigation: Less than Significant.

J. PALEONTOLOGICAL RESOURCES

Standards of Significance

- If the project results in disturbance of a paleontological resource.

Reaches 3-9 A/B Policy Options 1, 2, 3 or 4

Significant Impact : Excavation and trenching in geologic formations that have resource bearing potential. [Program EIR, subchapter 3.10, pp. 3.10-3 through 3.10-4]

Finding: Pursuant to section 15091(a)(1) of the State CEQA Guidelines, changes or alterations are required in, or incorporated into, the project that will substantially lessen or avoid the significant environmental effect as identified in the Program EIR, below a level of significance.

Explanation: Should a paleontological resource be encountered during project construction, disturbance of this resource may occur. As stated in the Significance Standards, potential impacts to paleontological resources would constitute a significant impact. In order to avoid significant impacts to paleontological resources, the mitigation measures outlined on pp. 3.10-4 of the EIR and described below would occur.

Mitigation Measures: The following mitigation measures are feasible and are required as a condition of approval and are made binding on the City through these findings. [Program EIR, subchapter 3.10, pp. 3.10-4]

- Prior to beginning any excavation work, the City or its contractor shall demonstrate that a qualified paleontologist has been retained to carry out a paleontological resources mitigation program.
- A paleontological monitor shall be onsite at all times during the original cutting/trenching or previously undisturbed geologic formations to inspect cuts for fossils.
- If fossils are discovered, the paleontologist or paleontological monitor shall recover them. The paleontological monitor shall have the authority to stop work or divert work until fossils can be recovered.
- Prepare fossils, along with copies of all pertinent field notes, photos and maps shall be deposited in a scientific institution with paleontological collections, such as the San Diego Natural History Museum.

Significance After Mitigation: Less than Significant.

These findings discuss all direct project impacts contained in the Program EIR and discussed at public hearings. However, to the extent that an impact or “alleged” impact of the project either direct or secondary has not been discussed in this document, the City Council hereby overrides such impact for the reasons described in the Statement of Overriding Considerations.

IX.

CUMULATIVE SIGNIFICANT EFFECTS AND MITIGATION MEASURES

Cumulative impacts are those which “are considered when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects” (Pub. Resources Code section 21082.2, subd. (b)). Several development

proposals and other related public works projects have been submitted for consideration or have been recently approved by the Cities of Chula Vista and San Diego and the County of San Diego in proximity to the Salt Creek Interceptor sewer and associated lateral alignment locations. These "current or probable future" development proposals would affect many of the same natural resources and public infrastructure as the proposed project. Several potentially significant cumulative impacts are associated with development of the proposed sewer infrastructure facilities in conjunction with these surrounding development and public works projects.

In formulating mitigation measures for the project, regional issues and cumulative impacts have been taken into consideration. Many of the mitigation measures adopted for the cumulative impacts are similar to the project level mitigation measures. This reflects the inability of the Lead Agency to impose mitigation measures on surrounding jurisdictions (i.e., City of San Diego, City of National City, Caltrans, Metropolitan Transit Development Board and Mexico) and the contribution of these jurisdictions to cumulative impacts. The project along with the other related projects will result in the following irreversible cumulative environmental changes. All page numbers following the impacts refer to pages from the Program EIR.

A. AIR QUALITY

Cumulative Impacts : The project, when combined with other development projects planned within the City of Chula Vista, would result in short-term air quality impacts due to construction of pipeline facilities. [Program EIR, subchapter 6, pp. 6-5]

Finding: Pursuant to section 15091 (a)(1) of the State CEQA Guidelines, specific economic, social, or other considerations make implementation of the No Project alternative infeasible. The infeasibility of the No Project alternative is described in Section X of these findings.

However, the following mitigation measure is designed to reduce cumulative impacts to air quality and is a requirement of project approval.

Explanation: Implementation of the project would result in short-term impacts to air quality associated with construction. The cumulative effect of the proposed project and other projects in the vicinity would incrementally contribute to the San Diego Air Basin's levels of PM-10 and O3. As a result, cumulative short-term impacts to air quality associated with construction of the project and other planned projects within the southern Chula Vista area are considered significant. In order to reduce potential significant short term air quality impacts to levels below significance, the mitigation measures described on pp. 3.2-8 through 3.2-10 of the EIR and outlined below will occur.

Mitigation Measures: The following mitigation measures are feasible and are required as a condition of approval and are made binding on the City through these findings. [Program EIR, Subchapter 6, pp. 6-5, pp. 3.2-8 through 3.2-10]

The following Best Management Practices (BMPs) shall be employed during all earthwork phases of the project:

1. The construction disturbance “footprint” shall be kept as small as possible;
2. Using adequate water and/or other dust palliatives on all disturbed areas in order to avoid particle blow-off;
3. Washing down or sweeping streets from which site access is taken to remove dirt carried from the site to the street to keep vehicles from pulverizing the dirt into fine particles;
4. Periodically street sweepers will be utilized to aid in the removal of dirt carried from the site to the street.
5. Terminating soil excavation, clearing or grading when wind speeds exceed 25 mph for an hourly average;
6. Covering/tarpping all vehicles hauling dirt or spoils on public roadways unless additional moisture is added to prevent material blow-off during transport;
7. The construction contractor shall comply with the approved traffic control plan to reduce non-project traffic congestion impacts. Methods to reduce construction interference with existing traffic and the prevention of truck queuing around local sensitive receptors shall be incorporated into this plan.

Significance After Mitigation: Less than Significant.

B. BIOLOGICAL RESOURCES

Cumulative Impacts : Implementation of the project in conjunction with other planned development and the extension of SR 125 would result in continual urbanization in Eastern Chula Vista, an area currently characterized as natural habitat. [Program EIR, subchapter 6, pp. 6-6]

Finding: Pursuant to section 15091 (a)(I) of the State CEQA Guidelines, specific economic, social, or other considerations make implementation of the No Project

alternative infeasible. The infeasibility of the No Project alternative is described in Section X of these findings.

Explanation: Implementation of the proposed Salt Creek Interceptor Sewer Project in conjunction with other planned projects within the eastern territories of Chula Vista would result in significant cumulative impacts to sensitive biological resources. Continued development within the eastern areas of Chula Vista and the extension of SR-125 would extend urban land uses into vacant areas characterized by natural habitats. In order to reduce potential impacts to these resources, the mitigation scenarios outlined on pp. 3.3-48 through 3.3-52 of the EIR and described below will reduce potential cumulative impacts to a level below significance.

Mitigation Measures: The following mitigation measures are feasible and are required as a condition of approval and are made binding on the City through these findings. [Program EIR, Subchapter 6, pp. 6-5 through 6-6, pp. 3.3-48 through 3.3-52]

- Sensitive Habitats:

Uplands:

Under the Subarea Plan - No additional mitigation is required for upland habitats, since the project is considered a "planned facility" and the conservation analysis for the MSCP and Subarea Plan considered implementation of the project. Under the Subarea Plan the project complies with the siting criteria identified in the Plan. Within the staging areas, natural upland habitats will be surveyed prior to construction and protected with construction fencing to prevent encroachment.

Without the Subarea Plan - Restoration of all temporary disturbance areas shall be conducted on site at a ratio of 1:1. For areas where direct permanent impacts will occur, mitigation of impacted coastal sage scrub (including undisturbed, disturbed and broom baccharis scrub) shall be provided at a ratio of 1:1. For southern cactus scrub, the mitigation ratio shall be 3:1 for direct, permanent impacts. For non-native grasslands the ratio shall be 0.5:1. Mitigation for direct impacts shall be provided at an on site location within existing disturbed areas, or at an off site location within the City of Chula Vista. Within the staging areas, natural upland habitats will be surveyed prior to construction and protected with construction fencing to prevent encroachment.

Wetlands:

With or without the Subarea Plan - Mitigation for wetland vegetation is required as follows: For permanent impacts, wetland habitat creation, enhancement, and/or

restoration of like-quality and like-functioning habitat at a ratio of 2:1 shall be performed. For temporary impacts, onsite restoration or enhancement of the affected area at a ratio of 1:1 shall be performed.

- Sensitive Plant Species:

All sensitive plants located within staging areas shall be completely avoided.

Under the Subarea Plan - No additional mitigation is required for covered species, since the project is considered a “planned facility” and the conservation analysis for the MSCP and Subarea Plan considered implementation of the project. Under the Subarea Plan scenario, Spring 2001 surveys for narrow endemics will be conducted to supplement the current database regarding sensitive species within the area of potential effect. A determination will be made that no more than 5% of the individuals within the area of potential effect, for each narrow endemic species, would be directly impacted by the project.

Mitigation for impacts to non-covered species will be incorporation of seed or nursery stock of those species into the preserved and/or restoration areas. As an impact-reducing mitigation measure, salvagable plant species (San Diego barrel cactus, snake cholla and variegated dudleya) will be salvaged prior to construction and installed within the preserve (it should be noted that, while impacts to San Diego barrel cactus have not been identified as significant, the City proposes to conduct salvage for this species, and it is therefore, included in this mitigation measure). Also, impacts to San Diego sunflower will be mitigated through the use of San Diego sunflower seed or container plants in the revegetation of temporary impact areas on the project site. Any narrow endemic plant species found within the final staging areas will be avoided through the placement of construction fencing around those populations prior to construction. Indirect impacts shall be avoided through the use of Best Management Practices, including strict limitations for all construction and maintenance activities within the identified 40 foot and 20 foot corridors, respectively.

Without the Subarea Plan - As an impact-reducing mitigation measure, salvagable plant species (San Diego barrel cactus, snake cholla and variegated dudleya) will be salvaged prior to construction and installed within the preserve (it should be noted that, while impacts to San Diego barrel cactus have not been identified as significant, the City proposes to conduct salvage for this species, and it is therefore, included in this mitigation measure). Also, impacts to San Diego sunflower will be mitigated through the use of San Diego sunflower seed or container plants

in the revegetation temporary impact areas on the project site. Impacts to variegated dudleya and snake cholla will be mitigated through the preservation of habitat containing those species within the preserve. Any sensitive plant species found within the final staging areas will be avoided through the placement of construction fencing around those populations prior to construction. Indirect impacts shall be avoided through the use of Best Management Practices, including strict limitations for all construction and maintenance activities within the identified 40 foot and 20 foot corridors, respectively.

- Sensitive Animals:

Under the Subarea Plan - No additional mitigation is required for covered species, since the project is considered a “planned facility” and the conservation analysis for the MSCP and Subarea Plan considered implementation of the project. Under the Subarea Plan the project complies with the siting criteria identified in the Plan. In areas potentially affecting least Bell’s vireo nesting sites, noise levels will not exceed 60 CNEL during the breeding season, March 15 to September 15. In areas potentially affecting raptor and/or California gnatcatcher nesting sites, noise levels will be modified, if necessary, to prevent noise from negatively impacting the breeding success of the pair during the breeding season (December 1 to May 31 for raptors and February 15 to August 15 for California gnatcatcher). The quino checkerspot butterfly is a federally listed endangered species and is not covered by the Subarea Plan. For quino checkerspot butterfly, additional surveys, in accordance with federal protocol, will be required in the year that the project grading commences. If adult quino checkerspot butterflies are found, avoidance through appropriate construction techniques and facility maintenance activities shall be required. If avoidance is not possible, any impacts to the species will require separate permitting under the federal Endangered Species Act; the mitigation required under such a permit may include, but not to be limited to, the purchase of additional mitigation land in an offsite location. Indirect impacts shall be avoided through the use of Best Management Practices, including strict limitations for all construction and maintenance activities within the identified 40 foot and 20 foot corridors, respectively.

Without the Subarea Plan - Mitigation for the identified direct impacts can be achieved through habitat replacement, as identified in Mitigation Measure [a]. For gnatcatchers, an additional mitigation measure will be to ensure that habitat replacement areas contained a 1:1 ratio of gnatcatcher pairs. The City will be required to obtain a permit for gnatcatcher take under the federal Endangered Species Act.

For quino checkerspot butterfly, additional surveys, in accordance with federal protocol, will be required in the year that the project grading commences. If adult quino checkerspot butterflies are found, avoidance through appropriate construction techniques and facility maintenance activities shall be required. If avoidance is not possible, purchase of mitigation land in an offsite location will be required. Any impacts to the species will require separate permitting under the federal Endangered Species Act.

Nesting bird surveys will need to be conducted within 500 feet of construction areas. If listed bird species are found nesting in these areas, mitigation measures will be either to restrict construction activity during the breeding season or reduce noise level to below 60 CNEL in those areas if construction occurs during the breeding season.

Indirect impacts shall be avoided through the use of Best Management Practices, including strict limitations for all construction and maintenance activities within the identified 40 foot and 20 foot corridors, respectively.

- **Jurisdictional Waters of the U.S.:**

Mitigation for wetland habitats is provided in a Mitigation Measure above. For unvegetated Waters of the U.S., topographic contours of all impacted areas shall be restored to pre-construction conditions. Jurisdictional waters, including wetlands, will be avoided in the staging areas through the placement of construction fencing surrounding those sensitive areas prior to construction. Separate permitting under the federal Clean Water Act for impacts to jurisdictional wetlands and Waters of the U.S. will be required.

Significance After Mitigation: Less than Significant.

C. CULTURAL RESOURCES

Cumulative Impact : The project, when combined with other planned projects, may have the potential to disturb unknown cultural resources.

Finding: Pursuant to section 15091 (a)(1) of the State CEQA Guidelines, specific economic, social, or other considerations make implementation of the No Project alternative infeasible. The infeasibility of the No Project alternative is described in Section X of these findings.

Explanation: Although the proposed project would not impact known cultural resources, development of the project, in conjunction with other planned

development, would require excavation activities that have the potential to disturb unknown cultural resources. Cumulative impacts to cultural resources could therefore be considered significant. Significant impacts that would potentially occur due to cumulative development can be mitigated to a level of less than significance through the mitigation measures outlined on pp. 3.4-17 of the EIR and described below.

Mitigation Measures: The following mitigation measures are feasible and are required as a condition of approval and are made binding on the City through these findings. [Program EIR, Subchapter 6, pp. 6-6, pp. 3.4-17]

- Monitoring of all trenching and clearing activities during the pipeline construction by a certified Archeologist;
- In the event that any undetected elements of the sites are encountered, construction shall be halted at that location until the discovery can be evaluated and mitigation measures implemented to reduce the significance of impacts to a less than significant level;
- Any activities related to the proposed project within the location of SDI-12,809 will require boundary markers restricting access to a significant archeological site located to the immediate north of the APE in this area.

Significance After Mitigation: Less than Significant.

D. TRAFFIC/TRANSPORTATION

Cumulative Impact: Cumulatively considerable short-term traffic circulation impacts could result if multiple projects were under construction simultaneously and in the same general location.

Finding: Pursuant to section 15091 (a)(1) of the State CEQA Guidelines, specific economic, social, or other considerations make implementation of the No Project alternative infeasible. The infeasibility of the No Project alternative is described in Section X of these findings.

Explanation: The proposed project would contribute to short-term impacts to traffic circulation on Main Street and Otay Valley Road. Significant cumulative traffic circulation impacts could result over the short-term if multiple projects were under construction simultaneously and in the same general location. Short-term traffic impacts caused by construction of the projects proposed within the study area would result from increased truck traffic and disruption of local traffic to residences and businesses. The severity of the short-term impacts cannot be determined at this time because it is not certain that any of the projects would

proceed simultaneously. However, implementation of the mitigation measures on pp. 3.9-9 through 3.9-12 of the EIR and reflected below, would reduce potential impacts to a level below significance.

Mitigation Measures: The following mitigation measures are feasible and are required as a condition of approval and are made binding on the City through these findings. [Program EIR, Subchapter 6, pp. 6-8, pp. 3.9-9 through 3.9-12]

- The City of Chula Vista will obtain an encroachment permit from respective local and state authorities, as required prior to the commencement of the construction phase. This process will include submittal of project plans, review of plans by the respective authorities, possible revisions of the plans relative to concerns brought forth by the issuing agency and finally, issuance of the respective permit. Potential permitting agencies include Caltrans, Metropolitan Transit Development Board (MTDB), and the City of San Diego.
- A traffic control plan shall be prepared prior to construction and implemented for all affected roadways. The traffic control plan will show all signage, striping, delineate detours, flagging operations, and any other procedures which will be used during construction to guide motorists safely through the construction zone and allow for a minimum of one lane of travel. The traffic control plan will also include provisions for coordinating with local emergency service providers regarding construction times and locations of lane closures as well as specifications for bicycle lane safety.

The Traffic Control Plan will be prepared in accordance with the City of Chula Vista's traffic control guidelines and will be prepared to ensure that access will be maintained to individual properties and businesses, and that emergency access will not be restricted. Additionally, the Plan will ensure that congestion and delay of traffic resulting from project construction are not substantially increased and will be of a short-term nature.

The limits of construction work area(s) and suggested alternate traffic routes for through traffic will be published in a local newspaper periodically throughout the construction period. In addition, the construction contractor shall provide not less than a 2-week written notice prior to the start of construction by mailing to owners/occupants along streets to be impacted during construction.

During construction, the City of Chula Vista will ensure that continuous, unobstructed, safe and adequate pedestrian and vehicular access to and from public facilities such as public utility stations and community centers will be provided. If normal access to these facilities is blocked by construction

alternative access shall be provided. Should this occur, the City of Chula Vista will coordinate with each facility's administrators in preparing a plan for alternative access.

During construction, the City of Chula Vista shall ensure that continuous, unobstructed, safe and adequate pedestrian and vehicular access to commercial/ industrial establishments, to include areas where mining operations are being conducted, during regular business hours occurs. Specific attention to the wide turning radius of large trucks associated with the Otay Landfill and other commercial/ industrial facilities along Main Street shall be accommodated. If normal access to business establishments is blocked, alternative access shall be provided. The City of Chula Vista shall coordinate with the businesses in preparing a plan for alternative access.

During construction, the City of Chula Vista shall maintain continuous vehicular and pedestrian access to residential driveways from the public street to the private property line, except where necessary construction precludes such continuous access for reasonable periods of time. For example, when the pipeline is initially being excavated, access to individual driveways may be closed during the course of a workday. Access shall be reestablished at the end of the workday. If a driveway needs to be closed or interfered with as described above, the construction contractor shall notify the owner or occupant of the closure of the driveway at least five working days prior to the closure.

Methods to maintain safe, vehicular and pedestrian access include the installation of temporary bridge or steel plates to cross over unfilled excavations. Whenever sidewalks or roadways are removed for construction, the contractor shall place temporary sidewalks or roadways promptly after backfilling until the final restoration has been made.

The traffic control plan shall include provisions to ensure that the construction contractor's work in any public street does not interfere unnecessarily with the work of other agencies such as emergency services providers, mail delivery, school buses, waste services, or Chula Vista Transit Buses.

- During project design, the City of Chula Vista shall coordinate with each jurisdiction, as well as its own transit division which may be affected by the project to determine the exact limits of project construction. This coordination effort shall be followed by specific measures to avoid conflicts resulting from other construction projects occurring within the direct vicinity of the project and within the same time period.

Coordination with the following entities will occur in conjunction with the proposed project:

- City of San Diego Traffic Engineering
- MTDB
- Caltrans
- Chula Vista Traffic Engineering
- In order to prevent an increase in congestion and delay from the Coors Amphitheatre concert loading and unloading events, facility design and placement shall be such that three eastbound lanes are available during the concert season. This is intended to prevent additional congestion and delay from occurring during event loading (ingress). This measure will mitigate potential impacts to Main Street and I-805, since no restrictions to the eastbound lanes would result and lane configurations would be the same as under existing loading procedure. In addition, no lane closures would be allowed during loading and unloading of a concert event.

Significance After Mitigation: Less than Significance.

X.

POTENTIAL PROJECT ALTERNATIVES

Where a lead agency has determined that, even after the adoption of all feasible mitigation measures, a project as proposed will still cause one or more significant environmental effects that cannot be substantially lessened or avoided, the agency, prior to approving the project as mitigated, must first determine whether, with respect to such impacts, there remain any project alternatives that are both environmentally superior and feasible within the meaning of CEQA. As noted earlier, in Section VI of these Findings, an alternative may be "infeasible" if it fails to fully promote the lead agency's underlying goals and objectives with respect to the project. Thus, "'feasibility' under CEQA encompasses 'desirability' to the extent that desirability is based on a reasonable balancing of the relevant economic, environmental, social, and technological factors." of a project. (*City of Del Mar*, *supra*, 133 Cal.App.3d at 417; *see also Sequoyah Hills*, *supra*, 23 Cal.App.4th at 715.)

In general, in preparing and adopting findings, a lead agency need not necessarily address feasibility when contemplating the approval of a project with significant impacts. Where

the significant impacts can be mitigated to an acceptable (insignificant) level solely by the adoption of mitigation measures, as is the case with this Project, the agency, in drafting its findings, has no obligation to consider the feasibility of environmentally superior alternatives, even if their impacts would be less severe than those of the project as mitigated. *Laurel Heights Improvement Association v. Regents of the University of California* (1988) 47 Cal.3d 376 [253 Cal. Rptr. 426]; *Laurel Hills Homeowners Association v. City Council* (1978) 83 Cal.App.3d 515 [147 Cal. Rptr. 842]; see also *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692 [270 Cal. Rptr. 650].

Notwithstanding the fact that the Project would not result in significant unmitigated impacts, the City has properly considered and reasonably rejected project alternatives as “infeasible” pursuant to CEQA. CEQA provides the following definition of the term “feasible” as it applies to the findings requirement: “Feasible” means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.” [Pub. Resources Code section 21061.1.] The CEQA Guidelines provide a broader definition of “feasibility” that also encompasses “legal” factors. CEQA Guidelines section 15364 states, “The lack of legal powers of an agency to use in imposing an alternative or mitigation measure may be as great a limitation as any economic, environmental, social, or technological factor.” (See also *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 565 [276 Cal. Rptr. 410].)

Accordingly, “feasibility” is a term of art under CEQA and thus may not be afforded a different meaning as may be provided by Webster’s dictionary or any other sources. Moreover, Public Resources Code section 21081 governs the “findings” requirement under CEQA with regard to the feasibility of alternatives. Specifically, no public agency shall approve or carry out a project for which an environmental impact report has been certified which identifies one or more significant effects on the environment that would occur if the project is approved or carried out unless the public agency makes one or more of the following findings:

- (1) “[c]hanges or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect as identified in the final EIR.” [CEQA Guidelines section 15091, subd. (a)(1).]
- (2) “such changes or alterations are within the responsibility and jurisdiction of another public agency and not the agency making the finding. Such changes have been adopted by such other agency or can and should be adopted by such other agency. [CEQA Guidelines section 15091, subd. (a)(2).]
- (3) “[s]pecific economic, legal, social, technological, or other considerations, including provision of employment opportunities for highly trained workers,

make infeasible the mitigation measures or project alternatives identified in the final EIR.” [CEQA Guidelines section 15091, subd. (a)(3).]

The concept of “feasibility” also encompasses the question of whether a particular alternative or mitigation measure promotes the underlying goals and objectives of a project. (*City of Del Mar v. City of San Diego* (1982) 133 Cal.App.3d 410, 417 [183 Cal. Rptr. 898]) “[F]easibility’ under CEQA encompasses ‘desirability’ to the extent that desirability is based on a reasonable balancing of the relevant economic, environmental, social, and technological factors.” (Ibid.; see also *Sequoiah Hills Homeowners Assn. v. City of Oakland* (1993) 23 Cal.App.4th 704, 715 [29 Cal.Rptr.2d 182].)

These findings contrast and compare the alternatives where appropriate in order to demonstrate that the selection of the Staff Recommended Alignment Alternative, has substantial environmental, planning, fiscal and other benefits. In rejecting certain alternatives, the decisionmakers have examined the finally approved project objectives and weighed the ability of the various alternatives to meet the objectives. The decisionmakers believe that the Project best meets the finally approved project objectives with the least environmental impact. The findings below examine the alternatives to determine feasibility.

The detailed discussion in Section IX demonstrates that all significant environmental effects of the project have been either substantially lessened or avoided through the imposition of existing policies or regulations or by the adoption of additional, formal mitigation measures recommended in the EIR.

Thus, the City can fully satisfy its CEQA obligations by determining whether any alternatives identified in the Draft EIR are both feasible and environmentally superior with respect to these impacts. (*Laurel Hills*, *supra*, 83 Cal.App.3d at 519-527; [147 Cal.Rptr. 842]; *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 730-731 [270 Cal.Rptr. 650]; and *Laurel Heights Improvement Association v. Regents of the University of California* (1988) 47 Cal.3d 376, 400-403 [253 Cal.Rptr. 426].) As the succeeding discussion will show, no identified alternative qualifies as both feasible and environmentally superior.

A. NO PROJECT ALTERNATIVE

Adequate capacity to serve future sewer demand does not exist within the existing sewage infrastructure system in eastern Chula Vista. The No Project Alternative would require that either an alternative sewage conveyance and/or treatment be provided in eastern Chula Vista or would require substantial reductions in the amount of approved development in eastern Chula Vista. As discussed in *Section 2, Project Description* of the Final EIR, the City does not plan to construct large-scale sewage treatment facilities within its jurisdiction. It should also be noted that any new sewage treatment facility in eastern Chula Vista would still result in the need for conveyance of sewage to the facility,

and would likely result in similar pumping and pipeline infrastructure as the other alternatives.

Curtailement of future development would not meet the objectives of the project to provide sewage service to existing development, as well as planned development that is approved conditioned upon the construction of new sewer facilities. Further, the substantial changes in land use that would be needed to allow existing facilities to meet future needs would cause substantial conflicts with adopted plans for housing, growth and infrastructure. Future infrastructure and its financing are dependent on the levels of development currently anticipated. The City has also entered into Development Agreements that provided for development approvals in exchange for public benefits. Those Agreements would need to be restructured, resulting in the loss of the negotiated public benefits.

The No Project Alternative would not meet the objectives of the project to provide sewage conveyance services to developing communities in eastern Chula Vista. In addition, the No Project alternative would require that the City either eliminate future development in the project service area, which would be inconsistent with existing planning for the area, or construct independent sewage treatment facilities to serve the project area, which would not provide avoidance or reduction of significant environmental impacts related to the project that could not be accomplished with proposed project mitigation.

Finding:

1. As discussed in Section 2, Project Description, the City does not plan to construct large-scale sewage treatment facilities within its jurisdiction. It should also be noted that any new sewage treatment facility in eastern Chula Vista would still result in the need for conveyance of sewage to the facility, and would likely result in similar pumping and pipeline infrastructure as the other alternatives.
2. Curtailement of future development would not meet the objectives of the project to provide sewage service to existing development, as well as approved development. Further, the substantial changes in land use that would be needed to allow existing facilities to meet future needs would cause substantial conflicts with adopted plans for housing, growth and infrastructure. Future infrastructure and its financing are dependent on the levels of development currently anticipated. The City has also entered into Development Agreements that provided for development approvals in exchange for public benefits. Those Agreements would need to be restructured, resulting in the loss of the negotiated public benefits.

3. The No Project Alternative would not meet the objectives of the project to provide sewage conveyance services to developing communities in eastern Chula Vista. In addition, the No Project alternative would require that the City either eliminate future development in the project service area, which would be inconsistent with existing planning for the area, or construct independent sewage treatment facilities to serve the project area, which would not provide avoidance or reduction of significant environmental impacts related to the project that could not be accomplished with proposed project mitigation.

B. ALTERNATIVE LOCATION

Reaches 9 through 5 of the Staff Recommended Alignment Alternative are generally located at a lower elevation than the areas to be served by the project. This is in accordance with the objective of maximizing the use of gravity flow to convey sewage from the project service area. Existing sewage facilities in the Telegraph and Poggi Canyon basins are upstream of much of the area intended to be served by the project. However, it is feasible to pump and force sewage flows upgradient from the service area into these basins.

This alternative would involve the use of numerous pump stations and force mains to convey sewage from lower elevations in the service area to these basins. As mentioned earlier, the sizing of existing pipelines in these Telegraph and Poggi alignments would not be adequate to convey the flows anticipated from approved development at buildout. Therefore, this alternative would also propose to up-size those facilities or to construct new parallel facilities within the existing alignments. It should be noted that implementation of this alternative would still require improvements or replacement of facilities within portions of Reach 9, from a location approximately 4,000 feet west of Interstate 805 to the MWW Metro Interceptor line located approximately 400 feet west of I-5. This is required because sewage from the Poggi basin currently flows into existing facilities in Main Street. This alternative would increase flows into the Main Street line beyond its current capacity. It is anticipated that the alignment for this portion of the facility would be the same as proposed under the Staff Recommended Alignment Alternative (i.e., constructed within Main Street).

Within Otay Ranch, the specific alignment and sizing of pipelines and pump stations would need to be determined when more specific development plans are in place. This is due to the fact that the sizing of pumps, force mains and related facilities is dependent on the ultimate gradient and distance over which the sewage would need to be pumped, which would not be determined until grading plans for development were further defined. This would not be considered a significant constraint to phasing of the project, since design of the facilities would likely be undertaken concurrent with the specific development areas that the facilities would serve.

AESTHETICS

Impacts to aesthetics associated with the Alternative Location would be slightly less for pipelines within the Otay Ranch area (Reaches 3-8A/B, all Policy Options) since the facilities would be located within future roadways, which would reduce or eliminate the need for separate maintenance roads. However, as stated in *Section 3.1*, of the Final EIR, aesthetic impacts associated with the surfacing of maintenance roads are not considered to be significant.

The Alternative Location alternative would require installation of pump stations at various locations at the lower elevations of the Otay Ranch project area. These above-ground facilities could potentially be visible from future surrounding land uses. However, it is anticipated that design and visual screening techniques could be employed in the construction of the facilities that would reduce or avoid significant aesthetic impacts.

Neither the Staff Recommended Alignment Alternative nor the Alternative Location alternative would be expected to result in significant unmitigable impacts to aesthetics.

AIR QUALITY

The Alternative Location alternative would result in similar construction-related impacts to air quality as the Staff Recommended Alignment Alternative, since the same construction techniques and time frames would be required for pipeline installation.

Long-term air quality impacts could be slightly higher for the Alternative Location alternative, due to the increased energy consumption required for the pumping of sewage, and potentially due to the consumption of diesel fuel to power the emergency generators that are required for the pumps in case of power loss. However, the indirect air quality impacts from electricity consumption, or from diesel -powered emergency generators, is not anticipated to be significant.

Neither the Staff Recommended Alignment Alternative nor the Alternative Location alternative would be expected to result in significant unmitigable impacts to air quality.

BIOLOGICAL RESOURCES

The Alternative Location alternative would avoid most of the impacts to biological resources that would result from the Staff Recommended Alignment Alternative. In addition, the Alternative Location alternative would result in most, if not all of the facilities being placed within areas that are outside of the proposed Chula Vista Subarea Plan preserve area. It is anticipated that the Alternative Location alternative would have similar impacts to waters of the U.S., since numerous drainages exist within the proposed development areas of Otay Ranch.

Mitigation measures, or design features of the Recommended Alignment Alternative result in mitigation of all potential impacts to biological resources for that alternative to a less than significant level. Therefore, while the Alternative Location alternative results in reduced impacts to biological resources, it does not provide mitigation for impacts that would be unmitigable under the Staff Recommended Alignment Alternative.

Neither the Staff Recommended Alignment Alternative nor the Alternative Location alternative would be expected to result in significant unmitigable impacts to biological resources.

CULTURAL RESOURCES

Cultural resource impacts associated with the Alternative Location alternative would need to be evaluated upon the identification of specific alignments for the facilities. The Staff Recommended Alignment Alternative does not result in any significant impacts to cultural resources. Therefore, regardless of the level of impact associated with the Alternative Location alternative, it does not provide mitigation for any significant unmitigable impacts associated with the Staff Recommended Alignment Alternative.

GEOLOGY/SOILS

Impacts to geology and soils that would be associated with the Alternative Location alternative are anticipated to be similar to those of the Staff Recommended Alignment Alternative, since it is similarly regionally located. No significant unmitigable impacts to soils or geology were identified for the Staff Recommended Alignment Alternative. Therefore, the Alternative Location alternative does not provide for mitigation of significant impacts that could not be achieved under the Staff Recommended Alignment Alternative.

HYDROLOGY AND WATER QUALITY

The primary difference between the Alternative Location alternative and the Staff Recommended Alignment Alternative in terms of hydrology and water quality is that the pipeline alignments for the Alternative Location alternative are proposed to be located within future streets, which would eliminate the need for surfacing of access roads. However, neither the Staff Recommended Alignment Alternative nor the Alternative Location alternative would be expected to result in significant unmitigable impacts to hydrology or water quality.

LAND USE AND PLANNING

Land use and planning impacts would be similar with both the Staff Recommended Alignment Alternative and the Alternative Location alternative, since under the Staff Recommended Alignment, the facilities are anticipated in both the Otay Ranch General

Development Plan and the Draft Chula Vista MSCP Subarea Plan. The Alternative Location alternative could also potentially affect land uses along Telegraph Canyon Road during construction. It is anticipated that application of measures similar to those proposed for Main Street under the Staff Recommended Alignment Alternative could be employed to reduce such impacts to less than significant levels. Some minor additional land use impacts could be expected from the pump stations associated with the Alternative Location alternative, however, it is anticipated that mitigation would be available to reduce those impacts to less than significant levels. This alternative is not anticipated to require the acquisition of rights-of-way solely for the proposed facilities, since the facilities would be located within existing and future roadways, which would require public dedication themselves.

Neither the Staff Recommended Alignment Alternative nor the Alternative Location alternative would be expected to result in significant unmitigable impacts to land use.

NOISE

Some minor additional impacts to noise could be expected from the Alternative Location alternative, as compared to the Staff Recommended Alignment alternative, from the operation of pumps associated with the pump stations. However, it is not anticipated that impacts would be significant and unmitigable.

Neither the Staff Recommended Alignment Alternative nor the Alternative Location alternative would be expected to result in significant unmitigable impacts to noise.

TRAFFIC/TRANSPORTATION

The Alternative Location Alternative would result in additional construction within existing roadways (Telegraph Canyon Road) for improvements to existing sewer facilities to enable them to carry the additional sewage flows from the project area. It is anticipated that application of measures similar to those proposed for Main Street under the Staff Recommended Alignment Alternative could be employed to reduce such impacts to less than significant levels.

Neither the Staff Recommended Alignment Alternative nor the Alternative Location alternative would be expected to result in significant unmitigable impacts to traffic/transportation.

PALEONTOLOGICAL RESOURCES

Neither the Alternative Location Alternative, nor the Staff Recommended Alternative would result in significant impacts to paleontological resources since both would be subject to mitigation measures that would avoid any significant impacts.

This alternative was not advanced to final planning and design stages since, while it is considered to be feasible, it was determined not to be practicable, due to the extensive amount of infrastructure required to pump large volumes of flow against topographical gradients. The extensive amount of pumping required for this alternative does not meet the project objectives of reducing pumping, consistent with current City policy (#570-03). In addition, the alternative also would require an extensive amount of construction that would be required in Telegraph Canyon Road, a transportation facility that, until additional regional transportation facilities are constructed, is approaching capacity levels of traffic. It is not anticipated that ultimate buildout of the regional transportation system will occur prior to the need to construct the proposed sewage facilities. Finally, the alternative does not result in avoidance or reduction of significant environmental impacts related to the project that could not be accomplished with proposed project mitigation.

Finding:

1. To serve development that is existing or is imminent, the pipelines in the Telegraph and Poggi alignments would need to be improved, and/or supplemented prior to those facilities reaching their capacity. This would require extensive construction activity within Telegraph Canyon Road, and would require construction of some of the pumping facilities. This alternative was determined not to be practicable, due to the extensive amount of infrastructure required to pump large volumes of flow against topographical gradients. The extensive amount of pumping required for this alternative does not meet the project objectives of reducing pumping, consistent with current City policy (#570-03). In addition, the alternative also would require an extensive amount of construction that would be required in Telegraph Canyon Road, a transportation facility that, until additional regional transportation facilities are constructed, is approaching capacity levels of traffic. It is not anticipated that ultimate build-out of the regional transportation system will occur prior to the need to construct the proposed sewage facilities. Finally, the alternative does not result in avoidance or reduction of significant environmental impacts related to the project that could not be accomplished with proposed project mitigation.

SALT CREEK INTERCEPTOR SEWER MITIGATION MONITORING REPORTING PROGRAM

July 9, 2001

INTRODUCTION

This mitigation monitoring reporting program (MMRP) was prepared for the City of Chula Vista for the Salt Creek Interceptor Sewer to comply with Assembly Bill 3180, which requires public agencies to adopt such programs to ensure effective implementation of mitigation measures. This monitoring program is dynamic in that it will undergo changes as additional mitigation measures are identified and additional conditions of approval are placed on the project throughout the project approval process.

This monitoring program will serve a dual purpose of verifying completion of the mitigation measures for the proposed project and generating information on the effectiveness of the mitigation measures to guide future decisions. The program includes the following:

- ☐ Monitoring team qualifications
- ☐ Specific monitoring activities
- ☐ Reporting system
- ☐ Criteria for evaluating the success of the mitigation measures

Salt Creek Interceptor Sewer Project is a proposed single, underground, polyvinyl chloride sewer pipeline (PVC) 18 to 48 inches in diameter with an estimated length of 73,519 feet. The proposed pipe facilities would range in size from approximately 21 inches to approximately 48 inches, and would convey up to 13 million gallons per day (MGD) of sewage. The alignment of the pipeline is described in nine segments or "reaches".

The Sewer Project is designed to convey flows from planned mixed-use development in eastern Chula Vista to the City of San Diego's Metro Interceptor Sewer west of Interstate 5. The proposed project will extend from the existing sewer facilities located near Olympic Parkway south along Salt Creek, west along the Otay River and Main Street until its connection with the San Diego's Metro Interceptor Sewer west of Interstate 5. Reach 9B is the westernmost portion of the pipeline, with Reaches 8A/B through 6 moving east through the Otay River Valley. Reach 5 turns north at Salt Creek Canyon, and Reaches 4 and 3 continue north up the canyon to Olympic Parkway. Reach 1 has already been constructed

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and Reach 2 has been studied and its alignment approved as part of approved development within which the Reach is located. Reaches 1 and 2 are not considered to be part of the proposed project.

Primary facilities include an interceptor serving planned and approved development adjacent to the Salt Creek area. Associated facilities include three sewer laterals serving Village 11 on the west side of Salt Creek, one sewer lateral serving the Olympic Training Center on the east side of Salt Creek, plus connection structures associated with existing pipelines (Reaches 1 and 2, an existing 5,900 foot section of Reach 5 and the City of San Diego Metro Interceptor), an access road, manholes and pre-determined staging areas.

The project also includes associated facilities, including but not limited to, three sewer laterals serving Village 11 on the west side of Salt Creek, and one sewer lateral serving the Olympic Training Center on the east side of Salt Creek.

The following is a discussion of the currently recommended alignment described by individual reaches.

Reach 9A/B

Reach 9 includes the westernmost portion of the project and is divided into two subreaches, 9A and 9B. Reach 9B extends from the southwestern part of the City, approximately 500 feet west of I-5 to a point approximately 500 feet east of where Main Street (old Otay Valley Road) turns to the south, a distance of approximately 28,000 lineal feet, or 5.3 miles generally defining the western boundary of the Otay Ranch. Reach 9B is characterized by a mixture of residential, commercial, and industrial land uses and is located outside of the wildlife refuge. At a point approximately 4,000 feet west of I-805, the pipeline would divert from the Main Street alignment and travel within Otay Valley Road. Reach 9A begins at a point approximately 2,000 feet west of I-805, where the alignment would be placed back into Main Street. The reason for this diversion is a rise in elevation along Main Street that would require the sewer to be placed too deep for practical maintenance. The pipeline would then continue east to the end of the paved roadway, and further east beyond the paved road, within a dirt road, for another approximately 500 feet. There is a segment of gravity sewer line within Reach 9A south of the existing Chula Vista Auto Park that is not connected to the main alignment, but is considered to be part of Reach 9A. This portion of Reach 9A is

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proposed to convey existing sewer flows from the Auto Park directly into a City of San Diego facility via gravity flow. The flows from this area are currently pumped up to Main Street. This portion of the project would eliminate the need for the existing pump station located within the Auto Park. In Reach 9A/B, as well as throughout the alignment, possible construction staging areas were identified based on the various opportunities and constraints along the route.

Reaches 8A/B through 6

Reaches 8A/B through 6, approximately 17,700 linear feet, or 3.4 miles continue the pipeline in the dirt road that services an existing quarry operation on the northern slopes of the Otay River Valley. The dirt road is located in the river terraces above the floodplain of the Otay River.

Reach 5

From Reach 6, the (Salt Creek Interceptor) alignment continues within existing dirt roads for approximately 3,500 linear feet, until it reaches the existing pipeline segment constructed within Salt Creek Canyon. The remaining portion of Reach 5 is the alignment of that existing 5,900 linear foot 21" & 24" diameter pipeline.

Reaches 4 and 3

A portion of Reach 4 consists of the existing sewer pipe segment. That portion extends south from the existing County Water Authority easement, into Reach 5. Policy Option 3, as described in the Addendum to the Draft EIR is the proposed alignment for the facility in Reaches 3 and 4.

Policy Options 1 or 3

Policy Options 1 or 3 consist of the segment of pipe within Reaches 3 and 4 of the proposed alignment that is designed for gravity flow. The alignment extends north from the existing pipeline and travels through the lower portions of the slopes that define the western side of Salt Creek Canyon. This area contains native upland habitats through approximately two thirds of the alignment (a total of approximately 6,000 linear feet of the 9,000 linear-foot

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length), the remaining portion of the alignment travels through cultivated agricultural fields. Reach 3 would end at Olympic Parkway, on the west side of Salt Creek Canyon, and would connect to the approved and/or constructed Reaches 2 and 1.

Under Policy Options 1 or 3, three sewer laterals would be proposed to extend from Village 11 of Otay Ranch to the facility, two in the northern Salt Creek area and one that would parallel the existing power and water easements.

A gravity sewer lateral extending from the Olympic Training Center would also connect to the alignment within Reach 4 under Policy Options 1 or 3. This lateral would convey existing sewage flows from the Olympic Training Center that are currently pumped into the Telegraph Canyon basin.

Policy Options 2 or 4

Policy Options 2 or 4 consist of an alignment that would avoid most of the impacts to sensitive upland habitats along the western slopes of Salt Creek Canyon. This would be achieved under Policy Option 2 by pumping sewage from the southern terminus of Reach 2 up to an alignment that is either within or parallel to the proposed alignment for future Hunte Parkway, on the eastern edge of the future Village 11 of Otay Ranch. Policy Option 4 would avoid impacts by tunneling under portions of the alignment containing sensitive habitat. The alignment would then turn south, parallel to the existing SDG&E and County Water Authority easements, and connect to the existing pipeline segment in Salt Creek Canyon. The total length of this segment is approximately 12,000 linear feet. It should be noted that impacts to native habitats would occur within the proposed easement that would parallel existing easements. Policy Option 2 also includes a pump station capable of pumping approximately 4.5 million gallons per day (MGD) of sewage. The pump station would be located at the southerly terminus of Reach 2.

The lateral from the Olympic Training Center would still be required under Policy Options 2 or 4. It should be noted that, in the absence of Policy Options 1 or 3, the Olympic Training Center lateral would have to be increased in length over that proposed in Policy Options 1 or 3, since the connection point of the lateral would be southerly of the proposed connection under Policy Options 1 or 3.

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The EIR, incorporated herein as referenced, focused on issues determined to be potentially significant by the City of Chula Vista. The issues addressed in the EIR include aesthetics, air quality, biological resources, cultural resources, geology and soils, hydrology and water quality, land use and planning, noise, traffic/transportation, and paleontological resources. The environmental analysis concluded that for all of the environmental issues discussed, some of the significant and potentially significant impacts could be avoided or reduced through implementation of recommended mitigation measures. Potentially significant cumulative impacts requiring mitigation were identified for aesthetics, air quality, biological resources, cultural resources, geology, hydrology, traffic/transportation, and paleontological resources.

Assembly Bill 3180 requires monitoring of only those impacts identified as significant or potentially significant. The monitoring program for the Salt Creek Interceptor Sewer and therefore addresses the impacts associated with only the issue areas identified above.

MITIGATION MONITORING TEAM

A monitoring team should be identified once the mitigation measures have been adopted as conditions of approval by the Chula Vista City Council. Managing the team would be the responsibility of the Mitigation Monitor (MM). The monitoring activities would be accomplished by the Environmental Monitors (EMs), Environmental Specialists (ESs), and the MM. While specific qualifications should be determined by the City of Chula Vista, the monitoring team should possess the following capabilities:

- ☐ Interpersonal, decision-making, and management skills with demonstrated experience in working under trying field circumstances;
- ☐ Knowledge of and appreciation for the general environmental attributes and special features found in the project area;
- ☐ Knowledge of the types of environmental impacts associated with construction of cost-effective mitigation options; and
- ☐ Excellent communication skills.

The responsibilities of the MM throughout the monitoring effort include the following:

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- ☐ Implement and manage the monitoring program;
- ☐ Provide quality control for the site-development monitoring;
- ☐ Administrate and prepare daily logs, status reports, compliance reports, and the final construction monitoring;
- ☐ Act as liaison between the City of Chula Vista and the applicant's contractors;
- ☐ Monitor on-site, day-to-day construction activities, including the direction of EMs and ESs in the understanding of all permit conditions, site-specific project requirements, construction schedules, and environmental quality control effort;
- ☐ Ensure contractor knowledge of and compliance with all appropriate permit conditions;
- ☐ Review all construction impact mitigation and, if need be, modify existing mitigation or proposed additional mitigation;
- ☐ Have the authority to require correction of observed activities that violate project environmental conditions or that represent unsafe or dangerous conditions; and
- ☐ Maintain prompt and regular communication with the on-site EMs and ESs and personnel responsible for contractor performance and permit compliance.

The primary role of the Environmental Monitors is to serve as an extension of the MM in performing the quality control functions at the construction sites. Their responsibilities and functions are to:

- ☐ Maintain a working knowledge of the Salt Creek Interceptor Sewer permit conditions, contract documents, construction schedules and progress, and any special mitigation requirements for his or her assigned construction area;
- ☐ Assist the MM and Salt Creek Interceptor Sewer construction contractors in coordinating with City of Chula Vista compliance activities;
- ☐ Observe construction activities for compliance with the City of Chula Vista permit conditions; and
- ☐ Provide frequent verbal briefings to the MM and construction personnel, and assist the MM as necessary in preparing status reports.

The primary role of the Environmental Specialists is to provide expertise when environmentally sensitive issues occur throughout the development phases of project implementation and to provide direction for mitigation.

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PROGRAM PROCEDURAL GUIDELINES

Prior to any construction activities, meetings should take place between all the parties involved to initiate the monitoring program and establish the responsibility and authority of the participants. Mitigation measures that need to be defined in greater detail will be addressed prior to any project plan approvals in follow-up meetings designed to discuss specific monitoring effects.

An effective reporting system must be established prior to any monitoring efforts. All parties involved must have a clear understanding of the mitigation measures as adopted and these mitigations must be distributed to the participants of the monitoring effort. Those that would have a complete list of all the mitigation measures adopted by the City of Chula Vista would include the City of Chula Vista, the project applicant, the MM, and the construction crew supervisor. The MM would distribute to each Environmental Specialist and Environmental Monitor a specific list of mitigation measures that pertain to his or her monitoring tasks and the appropriate time frame that these mitigations are anticipated to be implemented.

In addition to the list of mitigation measures, the monitors will have mitigation monitoring report (MMR) forms, with each mitigation measure written out on the top of the form. Below the stated mitigation measure, the form will have a series of questions addressing the effectiveness of the mitigation measure. The monitors shall complete the MMR and file it with the MM following the monitoring activity. The MM will then include the conclusions of the MMR into an interim and final comprehensive construction report to be submitted to the City of Chula Vista. This report will describe the major accomplishments of the monitoring program, summarize problems encountered in achieving the goals of the program, evaluate solutions developed to overcome problems, and provide a list of recommendations for future monitoring programs. In addition, and if appropriate, each EM or ES will be required to fill out and submit a daily log report to the MM. The daily log report will be used to record and account for the monitoring activities of the monitor. Weekly and/or monthly status reports, as determined appropriate, will be generated from the daily logs and compliance reports and will include supplemental material (i.e., memoranda, telephone logs, and letters). This type of feedback is essential for the City of Chula Vista to confirm the implementation and effectiveness of the mitigation measures imposed on the project.

Salt Creek Interceptor Sewer Mitigation Monitoring Reporting Program

ACTIONS IN CASE OF NONCOMPLIANCE

There are generally three separate categories of noncompliance associated with the adopted conditions of approval:

- ☐ Noncompliance requiring an immediate halt to a specific task or piece of equipment;
- ☐ Infraction that warrants an immediate corrective action but does not result in work or task delay; and
- ☐ Infraction that does not warrant immediate corrective action and results in no work or task delay.

In each case, the MM would notify the Salt Creek Interceptor Sewer contractor and the City of Chula Vista of the noncompliance, and an MMR would be filed with the MM on a daily basis.

There are a number of options the City of Chula Vista may use to enforce this program should noncompliance continue. Some methods commonly used by other lead agencies include “stop work” orders, fines and penalties (civil), restitution, permit revocations, citations, and injunctions. It is essential that all parties involved in the program understand the authority and responsibility of the on-site monitors. Decisions regarding actions in case of noncompliance are the responsibility of the City of Chula Vista.

SUMMARY OF PROJECT IMPACTS AND MITIGATION MEASURES

The following table summarizes the potentially significant project impacts and lists the associated mitigation measures and the monitoring efforts necessary to ensure that the measures are properly implemented. All the mitigation measures identified in the EIR are recommended as conditions of project approval and are stated herein in language appropriate for such conditions. In addition, once the Salt Creek Interceptor Sewer Project has been approved, and during various stages of implementation, the designated monitors, the City of Chula Vista, and the applicant will further refine the mitigation measures.

SALT CREEK INTERCEPTOR SEWER MITIGATION MONITORING REPORTING PROGRAM

Potential Significant Impact	Mitigation Measure	Time Frame of Mitigation				Monitoring Reporting Agency	Time Frame for Verification Frequency to		Date of Completed on	Date of Verificatl on
		TM	Pre Const	Durin g Const	Post Const		Monitor	Report		
LAND USE										
Reach 9A/B There is potential for significant land use impacts resulting from temporary detours and access limitations to structures and property. Access limitations include blocking vehicular access to an existing land use for more than four hours per day.	Reach 9A/B See #2 (a) and (d)									
Because the plans of the proposed sewer pipeline are such that the pipeline will be placed beneath the ground surface, there are no foreseeable impacts to the proposed planned land uses. Impacts could occur if multiple planned projects (e.g., planned improvements to Main Street and Broadway) are to be constructed simultaneously with the proposed project.	#1 (a) During project design, the City of Chula Vista will coordinate with each jurisdiction affected by the project to determine the exact limits of project construction. This coordination effort is intended to prevent any conflicts resulting from other projects occurring within the direct vicinity of the project and within the same time period. Coordination with the following jurisdictional departments would occur in conjunction with the proposed project: City of San Diego Traffic Engineering, City of Chula Vista Engineering, MTDB and Caltrans.	X				City of Chula Vista				
	#1 (b) Project construction within a freeway right-of-way will require a licensing agreement between the City of Chula Vista and Caltrans. This agreement will delineate all details such as tunneling, specifications for pipeline depth below surface and encasement requirements. This document will also discuss safety issues such as the use of a flag crew during work within the right-of-way.	X				City of Chula Vista/Caltrans				

SALT CREEK INTERCEPTOR SEWER MITIGATION MONITORING REPORTING PROGRAM (cont.)

Potential Significant Impact	Mitigation Measure	Time Frame of Mitigation				Monitoring Reporting Agency	Time Frame for Verification Frequency to		Date of Completion	Date of Verification
		TM	Pre Const	Durin g Const	Post Const		Monitor	Report		
TRANSPORTATION/TRAFFIC CIRCULATION										
Reach 8 Access to quarry mining operations along an existing unimproved roadway would be lost.	<p>Reach 8</p> <p>#2 (a) A traffic control plan shall be prepared prior to construction and implemented for all affected roadways. The traffic control plan will show all signage, striping, delineate detours, flagging operations, and any other procedures which will be used during construction to guide motorists safely through the construction zone and allow for a minimum of one lane of travel. The traffic control plan will also include provisions for coordinating with local emergency service providers regarding construction times and locations of lane closures as well as specifications for bicycle lane safety.</p> <p>The Traffic Control Plan will be prepared in accordance with the City of Chula Vista's traffic control guidelines and will be prepared to ensure that access will be maintained to individual properties and businesses, and that emergency access will not be restricted. Additionally, the Plan will ensure that congestion and delay of traffic resulting from project construction are not substantially increased and will be of a short-term nature.</p> <p>The limits of construction work area(s) and suggested alternate traffic routes for through traffic will be published in a local newspaper periodically throughout the construction period. In addition, the construction contractor shall provide not less than a 2-week written notice prior to the start of construction by mailing to owners/occupants along streets to be impacted during construction.</p> <p>During construction, the City of Chula Vista will ensure that continuous, unobstructed, safe and adequate pedestrian and vehicular access to and from public facilities such as public utility</p>	X		X		City of Chula Vista				

SALT CREEK INTERCEPTOR SEWER MITIGATION MONITORING REPORTING PROGRAM (cont.)

Potential Significant Impact	Mitigation Measure	Time Frame of Mitigation				Monitoring Reporting Agency	Time Frame for Verification		Date of Completion	Date of Verification
		TM	Pre Const	Durin g Const	Post Const		Frequency to Monitor	Report		
	stations and community centers will be provided. If normal access to these facilities is blocked by construction alternative access shall be provided. Should this occur, the City of Chula Vista will coordinate with each facility's administrators in preparing a plan for alternative access.									
	During construction, the City of Chula Vista shall ensure that continuous, unobstructed, safe and adequate pedestrian and vehicular access to commercial/ industrial establishments, to include areas where mining operations are being conducted, during regular business hours occurs. Specific attention to the wide turning radius of large trucks associated with the Otay Landfill and other commercial/ industrial facilities along Main Street shall be accommodated. If normal access to business establishments is blocked, alternative access shall be provided. The City of Chula Vista shall coordinate with the businesses in preparing a plan for alternative access.									
Reach 9A/B Main Street: I-5 to Otay Valley Road and from Otay Valley Road to I-805	Reach 9A/B #2 (b) The City of Chula Vista will obtain an encroachment permit from respective local and state authorities, as required prior to the commencement of the construction phase. This process will include submittal of project plans, review of plans by the respective authorities, possible revisions of the plans relative to concerns brought forth by the issuing agency and finally, issuance of the respective permit. Potential permitting agencies include Caltrans, Metropolitan Transit Development Board (MTDB), and the City of San Diego.			X						

See also #2 (a) above

SALT CREEK INTERCEPTOR SEWER MITIGATION MONITORING REPORTING PROGRAM (cont.)

Potential Significant Impact	Mitigation Measure	Time Frame of Mitigation				Monitoring Reporting Agency	Time Frame for Verification Frequency to		Date of Completion	Date of Verification
		TM	Pre Const	During Const	Post Const		Monitor	Report		
	#2 (c) During project design, the City of Chula Vista shall coordinate with each jurisdiction, as well as its own transit division which may be affected by the project to determine the exact limits of project construction. This coordination effort shall be followed by specific measures to avoid conflicts resulting from other construction projects occurring within the direct vicinity of the project and within the same time period. Coordination with the following entities shall occur in conjunction with the proposed project: City of San Diego Traffic Engineering, MTDB, Caltrans, and Chula Vista Traffic Engineering.		X			City of Chula Vista				
Olay Valley Road	See #2 (a) above									
Main Street: I-805 to Heritage Road	See #2 (b) above									
	#2(d) In order to prevent an increase in congestion and delay from the Coors Amphitheatre concert loading and unloading events, facility design and placement shall be such that three eastbound lanes are available during the concert season. This is intended to prevent additional congestion and delay from occurring during event loading (ingress). This measure shall mitigate potential impacts to Main Street and I-805, since no restrictions to the eastbound lanes shall result and lane configurations shall be the same as under existing loading procedure. In addition, no lane closures shall be allowed during loading and unloading of a concert event.		X	X		City of Chula Vista and Caltrans				

SALT CREEK INTERCEPTOR SEWER MITIGATION MONITORING REPORTING PROGRAM (cont.)

MITIGATION MONITORING REPORTING PROTOCOL										
Potential Significant Impact	Mitigation Measure	Time Frame of Mitigation				Monitoring Reporting Agency	Time Frame for Verification		Date of Completion	Date of Verification
		TM	Pre Const	During Const	Post Const		Monitor	Report		
BIOLOGICAL RESOURCES										
Direct Impacts to Vegetation Communities. Project impacts were calculated based on a construction corridor that is 40-foot-wide. Potential impacts are evaluated as follows. Direct, permanent impacts would result from construction of a 20-foot wide access road, centered on the alignment.	#3(a) The MSCP and Draft Chula Vista Subarea Plan provide for conservation of upland habitats and species through preserve design, regulation of impacts and uses, and management of the preserve. For certain impacts, implementation of the Subarea Plan would be considered adequate to reduce the significance of the impacts to less than significant levels. The Subarea Plan has been conditionally approved by the Chula Vista City Council, and is being reviewed and considered by the U.S. Fish and Wildlife Service and the California Department of Fish and Game. An Implementing Agreement for the Subarea Plan is also being negotiated among the parties. Therefore, in some cases, as noted below, two scenarios of mitigation are provided: with the approval of the Subarea Plan and execution of the Implementing Agreement, and without.		X			City of Chula Vista and project biologist				
Reaches 3-8A/B Policy Options 1 or 3 The proposed project would directly impact 3.2 acres of sensitive upland habitats comprised of 0.36 acre of annual grasslands, 0.89 acre of broom baccharis scrub, 0.22 acre of disturbed broom baccharis scrub, 1.56 acre of coastal sage scrub, and 0.18 acre of disturbed coastal sage scrub.	#3(a) UPLANDS Under the Subarea Plan - No additional mitigation is required for upland habitats, since the project is considered a "planned facility" and the conservation analysis for the MSCP and Subarea Plan considered implementation of the project. Under the Subarea Plan the project complies with the siting criteria identified in the Plan. Within the staging areas, natural upland habitats will be surveyed prior to construction and protected with construction fencing to prevent encroachment. Without the Subarea Plan - Restoration of all temporary disturbance areas shall be conducted on site at a ratio of 1:1. In accordance with comments received during public review, the top four inches of topsoil disturbed by the project		X			City of Chula Vista and project biologist				

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SALT CREEK INTERCEPTOR SEWER MITIGATION MONITORING REPORTING PROGRAM (cont.)

Potential Significant Impact	Mitigation Measure	Time Frame of Mitigation				Monitoring Reporting Agency	Time Frame for Verification Frequency to		Date of Completion	Date of Verification
		TM	Pre Const	During Const	Post Const		Monitor	Report		
	would be salvaged, as would native plants, and stored at clearly marked areas for use in the revegetation plan. For areas where direct permanent impacts will occur, mitigation of impacted coastal sage scrub (including undisturbed, disturbed and broom baccharis scrub) shall be provided at a ratio of 1:1. For southern cactus scrub, the mitigation ratio shall be 3:1 for direct, permanent impacts. For non-native grasslands the ratio shall be 0.5:1. Mitigation for direct impacts shall be provided at an on site location within existing disturbed areas, or at an off site location within the City of Chula Vista. Within the staging areas, natural upland habitats will be surveyed prior to construction and protected with construction fencing to prevent encroachment.									
The proposed project would directly impact approximately 0.3 acre of wetlands comprised of 0.05 acre of cismontane alkali marsh, 0.07 acre of cismontane alkali marsh/freshwater marsh, 0.11 acre of disturbed wetland, 0.002 acre of mule fat scrub, 0.03 acre of mixed riparian scrub, and 0.05 acre of tamarisk scrub.	#3 (b) WETLANDS With or without the Subarea Plan - Mitigation for wetland vegetation is required as follows: For permanent impacts, wetland habitat creation, enhancement, and/or restoration of like-quality and like-functioning habitat at a ratio of 2:1 would be appropriate. For temporary impacts, onsite restoration or enhancement of the affected area at a ratio of 1:1 shall be performed.		X			City of Chula Vista and project biologist				
<u>Reaches 3-8A/B Policy Options 2 or 4</u> The proposed project would directly impact 2.2 acres of sensitive upland habitats comprised of 0.43 acre annual grasslands, 0.04 acre of broom	<u>Reaches 3-8A/B Policy Options 2 or 4</u> Mitigation measures for the proposed project with Policy Options 2 or 4 would be the same as with Policy Options 1 or 3.									

Potential Significant Impact	Mitigation Measure	Time Frame of Mitigation				Monitoring Reporting Agency	Time Frame for Verification Frequency to		Date of Completion	Date of Verification			
		TM	Pre Const.	During Const.	Post Const.		Monitor	Report					
baccharis scrub, 1.69 acre of coastal sage scrub, 0.05 acre of disturbed coastal sage scrub and 0.01 acre of southern cactus scrub. The proposed project would directly impact approximately 0.24 acre of wetlands comprised of 0.03 acre of cismontane alkali marsh, 0.07 acre of cismontane alkali marsh/freshwater marsh, 0.11 acre of disturbed wetland, and 0.03 acre of mixed riparian scrub.	#3(c) All sensitive plants located within staging areas shall be completely avoided. Reaches 3-8 A/B Policy Options 1 or 3 Under the Subarea Plan - No additional mitigation is required for covered species, since the project is considered a "planned facility" and the conservation analysis for the MSCP and Subarea Plan considered implementation of the project. Under the Subarea Plan scenarios will Spring 2001 surveys for narrow endemics will be conducted to supplement the current database regarding sensitive species within the area of potential effect. A determination will be made that no more than 5% of the individuals within the area of potential effect, for each narrow endemic species, would be directly impacted by the project.		X	X		City of Chula Vista and project biologist							
<u>Direct Impacts to Sensitive Plant Species</u> All plants found within the permanent and temporary impact areas are considered to be 100 percent lost. Within the staging areas, sensitive species will be avoided and therefore no direct impacts are anticipated. Reaches 3-8 A/B Policy Options 1 or 3 Impacts to variegated dudleya, snake cholla and San Diego sunflower would be significant.	#3(d) Mitigation for impacts to non-covered species will be incorporation of seed or nursery stock of those species into the preserved and/or restoration areas. As an impact-reducing mitigation measure, salvageable plant species (San Diego barrel cactus, snake cholla and variegated dudleya) will be salvaged prior to construction and installed within the preserve (it should be noted that, while impacts to San		X	X		City of Chula Vista and project biologist							

SALT CREEK INTERCEPTOR SEWER MITIGATION MONITORING REPORTING PROGRAM (cont.)

Potential Significant Impact	Mitigation Measure	Time Frame of Mitigation				Monitoring Reporting Agency	Time Frame for Verification Frequency to		Date of Completion	Date of Verification
		TM	Pre Const	Durin g Const	Post Const		Monitor	Report		
	significant, the City proposes to conduct salvage for this species, and it is therefore, included in this mitigation measure). Also, impacts to San Diego sunflower will be mitigated through the use of San Diego sunflower seed or container plants in the revegetation of temporary impact areas on the project site. Any narrow endemic plant species found within the final staging areas will be avoided through the placement of construction fencing around those populations prior to construction. Indirect impacts shall be avoided through the use of Best Management Practices, including strict limitations for all construction and maintenance activities within the identified 40 foot and 20 foot corridors, respectively.									
	#3(e) Without the Subarea Plan - As an impact-reducing mitigation measure, salvagable plant species (San Diego barrel cactus, snake cholla and variegated dudleya) will be salvaged prior to construction and installed within the preserve (it should be noted that, while impacts to San Diego barrel cactus have not been identified as significant, the City proposes to conduct salvage for this species, and it is therefore, included in this mitigation measure). Also, impacts to San Diego sunflower will be mitigated through the use of San Diego sunflower seed or container plants in the revegetation temporary impact areas on the project site. Impacts to variegated dudleya and snake cholla will be mitigated through the preservation of habitat containing those species within the preserve. Any sensitive plant species found within the final staging areas will be avoided through the placement of construction fencing around those populations prior to construction. Indirect impacts shall be avoided through the use of		X	X		City of Chula Vista and project biologist				

SALT CREEK INTERCEPTOR SEWER MITIGATION MONITORING REPORTING PROGRAM (cont.)

MITIGATION MONITORING REPORTING PROGRAM										
Potential Significant Impact	Mitigation Measure	Time Frame of Mitigation				Monitoring Reporting Agency	Time Frame for Verification		Date of Completion	Date of Verification
		TM	Pre Const	During Const	Post Const		Monitor	Report		
	Best Management Practices, including strict limitations for all construction and maintenance activities within the identified 40 foot and 20 foot corridors, respectively.									
Reaches 3-8 A/B, Policy Options 2 or 4 Impacts to variegated dudleya, snake cholla and San Diego sunflower would be significant.	Reaches 3-8 A/B, Policy Options 2 or 4 Mitigation measures for the proposed project with Policy Options 2 or 4 would be the same as with Policy Options 1 or 3									
Direct Impacts to Sensitive Animal Species Reaches 3-8 A/B, Policy Options 1 and 2. Impacts to California gnatcatcher and quino checkerspot butterfly would be significant.	#3(f) Under the Subarea Plan - No additional mitigation is required for covered species, since the project is considered a "planned facility" and the conservation analysis for the MSCP and the Subarea Plan considered implementation of the project. Under the Subarea Plan the project complies with the siting criteria identified in the Plan. In areas potentially affecting least Bell's vireo nesting sites, noise levels will not exceed 60 CNEL during the breeding season, March 15 to September 15. In areas potentially affecting raptor and/or California gnatcatcher nesting sites, noise levels will be modified, if necessary, to prevent noise from negatively impacting the breeding success of the pair during the breeding season (December 1 to May 31 for raptors and February 15 to August 15 for California gnatcatcher). The quino checkerspot butterfly is a federally listed endangered species and is not covered by the Subarea Plan. For quino checkerspot butterfly, additional surveys, in accordance with federal protocol, will be required in the year that the project grading commences. If adult quino checkerspot butterflies are found, avoidance through appropriate construction techniques and facility maintenance activities shall be required. If avoidance is not possible, any impacts to the species will require separate permitting under		X			City of Chula Vista, project biologist, and U.S. Fish and Wildlife Service				

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SALT CREEK INTERCEPTOR SEWER MITIGATION MONITORING REPORTING PROGRAM (cont.)

Potential Significant Impact	Mitigation Measure	Time Frame of Mitigation			Monitoring Reporting Agency	Time Frame for Verification Frequency to		Date of Completion	Date of Verification
		TM	Pre Const	During Const		Monitor	Report		
	the federal Endangered Species Act; the mitigation required under such a permit may include, but not be limited to, the purchase of additional mitigation land in an offsite location. Indirect impacts shall be avoided through the use of Best Management Practices, including strict limitations for all construction and maintenance activities within the identified 40 foot and 20 foot corridors, respectively.								
	#3(g) Without the Subarea Plan - Mitigation for the identified direct impacts can be achieved through habitat replacement, as identified in Mitigation Measure [a]. For gnatcatchers, an additional mitigation measure will be to ensure that habitat replacement areas contained a 1:1 ratio of gnatcatcher pairs. The City will be required to obtain a permit for gnatcatcher take under the federal Endangered Species Act. For quino checkerspot butterfly, additional surveys, in accordance with federal protocol, will be required in the year that the project grading commences. If adult quino checkerspot butterflies are found, avoidance through appropriate construction techniques and facility maintenance activities shall be required. If avoidance is not possible, purchase of mitigation land in an offsite location will be required. Any impacts to the species will require separate permitting under the federal Endangered Species Act. Nesting bird surveys will need to be conducted within 500 feet of construction areas. If listed bird species are found nesting in these areas, mitigation measures will be either to restrict construction activity during the breeding season or reduce noise level to below 60 CNEL in those areas if construction occurs during the breeding		X		City of Chula Vista and project biologist and, if necessary, USFWS				

SALT CREEK INTERCEPTOR SEWER MITIGATION MONITORING REPORTING PROGRAM (cont.)

Potential Significant Impact	Mitigation Measure	Time Frame of Mitigation				Monitoring Reporting Agency	Time Frame for Verification		Date of Completion	Date of Verification
		TM	Pra Const	Durin g Const	Post Const		Monitor	Report		
	season. Indirect impacts shall be avoided through the use of Best Management Practices, including strict limitations for all construction and maintenance activities within the identified 40 foot and 20 foot corridors, respectively.									
<i>Indirect Impacts to Sensitive Animal Species</i> Noise impacts resulting from clearing, grading or grubbing activities would affect sensitive nesting bird species including California gnatcatcher, least Bell's vireo and nesting raptors.	See #3(f) above									
Indirect impacts to quino checkerspot could result from project construction and operation.	See #3(f) above									
<i>Direct Impacts to Jurisdictional Waters of the U.S.</i> Reaches 3-8 A/B, Policy Options 1 or 3 Direct impacts of 0.35 acre and temporary impacts of 0.39 acre to waters of the U.S., including wetlands, are considered significant.	#3(h) Mitigation for wetland habitats is provided in Mitigation Measure [a], above. For unvegetated Waters of the U.S., topographic contours of all impacted areas shall be restored to pre-construction conditions. Jurisdictional waters, including wetlands, will be avoided in the staging areas through the placement of construction fencing surrounding those sensitive areas prior to construction. Separate permitting under the federal Clean Water Act for impacts to jurisdictional wetlands and Waters of the U.S. will be required.			X	X	City of Chula Vista and project biologist				
HYDROLOGY/DRAINAGE										
<u>Reaches 3-9 A/B, Policy Options 1 or 3.</u> Portions of Reach 9 are located within the FEMA 100-year floodplain. Potential soil scour impacts would be significant.	#4(a) A scour analysis of the Otay River and Salt Creek shall be completed during final design to determine potential pipeline washout dangers commonly associated with major flooding events. Subsequent to this analysis, design of the pipeline and construction specifications shall include recommendations			X		City of Chula Vista				

**SALT CREEK INTERCEPTOR SEWER
MONITORING**

Potential Significant Impact	Mitigation Measure	Time Frame of Mitigation				Monitoring Reporting Agency		Time Frame for Verification Frequency to Report		Date of Completion	Date of Verification
		TM	Pre Const.	During Const.	Post Const.			Monitor	Report		
Dewatering of groundwater could significantly impact surface water quality. Dewatering is subject to water quality guidelines outlined by NPDES. Violation of water quality standards or waste discharge requirements would be significant.	from the report to ensure that potential impacts from scouring do not impact the integrity of the pipeline. #4(b) Dewatering shall be conducted in accordance with standard regulations of the RWQCB. A permit to discharge water from dewatering activities will be required. #4(c) In order to comply with existing regulations surrounding groundwater discharge, an NPDES General Storm Water Permit Program Permit shall be obtained by the City. This permit will require the City to outline all Best Management Practices (BMPs) planned in order to reduce potential water quality impacts. These BMPs are implemented through site specific implementation of a Storm Water Pollution Prevention Program (SWPPP) and is monitored by the Regional Water Quality Control Board.		X	X		City of Chula Vista/Regional Water Quality Control Board					
During construction, soil will be temporarily removed from the trench and placed above ground. Potential turbidity effects may occur to local drainages from an increase in sediment load as a result of sediment laden runoff from the construction site. The influx of such materials into local drainages would increase the total dissolved solids as well as several individual mineral and inorganic constituents. Altering or degrading existing water quality in this case with respect to total dissolved solids, is considered a significant impact.	#4(d) During construction, material stockpiles shall be placed such that they cause minimal interference with on-site drainage patterns. In case of rain, exposed stockpiles shall be covered with impermeable materials such as tarps in order to allow drainage to occur without excessive sediment loading.		X			City of Chula Vista/Regional Water Quality Control Board					

SALT CREEK INTERCEPTOR SEWER MITIGATION MONITORING REPORTING PROGRAM (cont.)

Potential Significant Impact	Mitigation Measure	Time Frame of Mitigation				Monitoring Reporting Agency	Time Frame for Verification Frequency to		Date of Completion	Date of Verification
		TM	Pre Const	During Const	Post Const		Monitor	Report		
<p>Dewatering of groundwater could significantly impact surface water quality.</p> <p>Dewatering is subject to water quality guidelines outlined by NPDES. Violation of water quality standards or waste discharge requirements would be significant.</p> <p>During construction, soil will be temporarily removed from the trench and placed above ground. Potential turbidity effects may occur to local drainages from an increase in sediment load as a result of sediment runoff from the construction site. The influx of such materials into local drainages would increase the total dissolved solids as well as several individual mineral and inorganic constituents. Altering or degrading existing water quality, in this case with respect to total dissolved solids, is considered a significant impact.</p>	See #4 (b) above									
	See #4 (c) above									
	See #4 (d) above									
<p><u>Cumulative Impact</u></p> <p>The proposed project may contribute to a significant impact to hydrology and water quality</p>	<p><u>Cumulative Impact</u></p> <p>See #4 (a) - (d) above</p>									
<p>AESTHETICS</p>										
<p><u>#5(a)</u> Mitigation to reduce visual impacts associated with the proposed pump station for Policy Option 2 shall include appropriate design of pump station housing, landscaping techniques to blend into the natural contour and surrounding vegetation, additional camouflaging techniques appropriate within the preserve</p>			X							
<p><u>Reaches 3 and 4, Policy Option 2</u></p> <p>The siting and construction of an above-ground pump station would be considered a significant impact.</p>										
City of Chula Vista										

SALT CREEK INTERCEPTOR SEWER MITIGATION MONITORING REPORTING PROGRAM (cont.)

Potential Significant Impact	Mitigation Measure	Time Frame of Mitigation				Monitoring Reporting Agency	Time Frame for Verification Frequency to		Date of Completion	Date of Verification
		TM	Pre Const	Durin g Const	Post Const		Monitor	Report		
	<p><u>Cumulative Impact</u> See #5(a) above</p> <p>The mitigation measures will not reduce this impact below a level of significance. The cumulative impact to landform alternation and visual quality remains significant and unmitigable.</p>	X	X			City of Chula Vista				
GEOLOGY AND SOILS										
<p>Reaches 3-9 A/B, Policy Options 1 or 3</p> <p>Alteration of the existing structure of potentially unstable soils may result in a public safety hazard to surrounding people and structures.</p>	<p>#6(a) Removal depths shall be evaluated by a qualified geotechnical consultant during excavation. Significant removals of compressible material are not anticipated, and shall generally be limited to within 2 to 3 feet of the bottom of the proposed sewer line. Compressible soils beneath the proposed sewer alignment shall be removed to a minimum depth of 2 feet below the bottom of the proposed sewer line. The lower excavation level shall be overlain with Mirafi 600x (or equivalent). Mirafi 600x is a type of fabric utilized for pipeline trench lining in order to provide for long-term trench stability. Excess soil shall be replaced with 2 feet of crushed aggregate prior to additional fill placement or construction of sewer improvements.</p> <p>#6(b) Dewatering will increase the overburden pressure resulting in unwanted settlement if it is done for wide areas. Due to the level of groundwater existing above the proposed inlet elevation, dewatering methods near the western portion of the alignment will consist of a conventional well-point system.</p> <p>#6(c) In areas where loose, saturated soils conditions are present, sections of pipe foundations and pipe zones shall be fitted with</p>		X			City of Chula Vista				
						City of Chula Vista				

SALT CREEK INTERCEPTOR SEWER MITIGATION MONITORING REPORTING PROGRAM (cont.)

Potential Significant Impact	Mitigation Measure	Time Frame of Mitigation				Monitoring Reporting Agency	Time Frame for Verification Frequency to		Date of Completion	Date of Verification
		TM	Pre Const	During Const	Post Const		Monitor	Report		
	<p>stabilized fabric.</p> <p>#6(d) Finer grain material shall be separated from open-grade rock around pipeline structures or within any portion of trench backfill. This will occur through the installation of filter fabric to prevent piping and settlement.</p> <p>#6(e) Vibratory shoring installation or removal methods shall be avoided within areas currently supporting existing infrastructure improvements. If vibratory methods are necessary, a settlement analysis and/or settlement monitoring of the pipeline or adjacent ground is required. If this method is necessary, settlement monitoring of adjacent sidewalks and structures shall be evaluated for shoring performance success.</p>		X			City of Chula Vista				
	<p>#6(f) In order to address excavations associated with riprap of the pipeline alignment, a riprap study shall be performed. This study will outline detailed riprap of each geologic unit within the study area. A riprap study may include a seismic refraction survey and/or trackhoe excavation. If the results of the riprap study or conditions discovered in the field during construction require additional disturbance beyond the 40-foot construction corridor width, additional environmental reviews of the area proposed to be disturbed must be conducted.</p>		X			City of Chula Vista				
Heavy ripping and/or the use of heavy-duty earthwork equipment may expose people or structures to an excavation hazard and is considered a significant impact.										
Caving could jeopardize the integrity of the trench as well as construction workers working within or around the subject trench. Exposure of people or structures to major hazards associated with geologic features is considered a significant impact, therefore mitigation is required	<p>#6(g) All excavation shall comply with OSHA requirements. Special care shall be taken for excavation near existing improvements and to verify that the integrity of the existing improvements will not be impacted. For shored excavations, a qualified geotechnical consultant shall review and approve the Shoring and proposed shoring design. Shoring and excavation design in the area of Interstate 805 and Interstate 5 shall be performed in</p>			X		City of Chula Vista				

SALT CREEK INTERCEPTOR SEWER MITIGATION MONITORING REPORTING PROGRAM (cont.)

Potential Significant Impact	Mitigation Measure	Time Frame of Mitigation				Monitoring Reporting Agency	Time Frame for Verification Frequency to		Date of Completion	Date of Verification
		TM	Pre Const	During Const	Post Const		Monitor	Report		
During construction of the proposed pipeline under Interstate 5 where pipe jacking is necessary, the passive earth pressure developed at the location of the thrust block may provide lateral support during pipe jacking operations, therefore a potentially significant impact could occur.	accordance with the Caltrans Trenching and Shoring Manual. #6(h) During pipe jacking underneath I-5, a safety factor of two shall be included in the design of any thrust blocks. In addition, pipe jacking beneath the existing railroad spur shall be performed in accordance with regional and local Caltrans and MTDB standards and requirements.		X	X		City of Chula Vista				
Surface water was encountered within Reaches 4 and 5. Alteration of existing groundwater characteristics, i.e., redirecting groundwater to surface waters, is considered a potential geotechnical hazard to people and structures within the area as this water may be contaminated or consist of unknown particles.	#6(i) In order to mitigate impacts associated with the encounter of groundwater during excavation, dewatering will be required. Hydrology and water quality issues and corresponding mitigation measures associated with dewatering are outlined in Section 3.5.4. Required Mitigation Measures for Hydrology and Water Quality, Mitigation Measures [b] and [c].		X	X		City of Chula Vista				
Seepage of ground or surface water into an exposed trench is considered a potential geological hazard to people and structures within the area as this water may introduce a contaminant to underground resources or alter existing groundwater composition.	#6(i) In order to control seepage into exposed trench areas, tight sheathing will be located within the trench. If this method is not possible, pumping by way of a sump located at the base of the trench will be employed. A combination of both methods may be necessary in some alignment locations.		X	X		City of Chula Vista				
Reaches 3-9 A/B Policy Options 2 or 4 Impacts related to the Staff Recommended Alignment for Reaches 3-9A/B would not be substantially different from those identified for the project with Policy Options 1 or 3. Please refer to the impact discussion for the Staff Recommended Alignment with Policy	See #6 (a) through (i) above.									

SALT CREEK INTERCEPTOR SEWER MITIGATION MONITORING REPORTING PROGRAM (cont.)

Potential Significant Impact	Mitigation Measure	Time Frame of Mitigation				Monitoring Reporting Agency	Time Frame for Verification Frequency to		Date of Completion	Date of Verification
		TM	Pre Const	During Const	Post Const		Monitor	Report		
Options 1 or 3 for a complete discussion of project impacts.										
Reaches 3-9 A/B, Policy Options 1 or 3										
Fugitive dust levels during construction are above the state standards and would be considered a significant impact.										
AIR QUALITY										
#7(a) The following Best Management Practices (BMPs) shall be employed during all earthwork phases of the project: 1. The construction disturbance "footprint" shall be kept as small as possible; 2. Using adequate water and/or other dust palliatives on all disturbed areas in order to avoid particle blow-off; 3. Washing down or sweeping streets from which site access is taken to remove dirt carried from the site to the street to keep vehicles from pulverizing the dirt into fine particles; 4. Periodically street sweepers would be utilized to aid in the removal of dirt carried from the site to the street. 5. Terminating soil excavation, clearing or grading when wind speeds exceed 25 mph for an hourly average; and 6. Covering/tarping all vehicles hauling dirt or spoils on public roadways unless additional moisture is added to prevent material blow-off during transport.			X	X		City of Chula Vista				
Where construction occurs within 50 feet of sensitive receptors, soiling nuisance would occur. While this impact would be short-term, it is considered significant	See #7(a) above									
Short-term combustion emissions during construction are above national and state Ambient Air Quality Standards.	See #7(a) above #7(b) The construction contractor shall comply with the approved traffic control plan to reduce non-project traffic congestion impacts. Methods to reduce construction interference with existing traffic and the preventive receptors shall be incorporated into this plan.			X	X	City of Chula Vista				

SALT CREEK INTERCEPTOR SEWER MITIGATION MONITORING REPORTING PROGRAM (cont.)

Potential Significant Impact	Mitigation Measure	Time Frame of Mitigation				Monitoring Reporting Agency	Time Frame for Verification Frequency to		Date of Completion	Date of Verification
		TM	Pre Const	During Const	Post Const		Monitor	Report		
Reaches 3-9 A/B, Policy Options 2 or 4 All impacts associated with construction of Reaches 3-9A/B the Staff Recommended Alternative, relative to combustion emissions and fugitive dust, would also be applicable to the project with Policy Options 2 or 4.	See #7 (a) and (b) above									
CULTURAL RESOURCES										
Reaches 3-9 A/B, Policy Options 1 or 3 Archaeological sites located within the Otay Ranch boundary and adjacent to the Area of Potential Effect may exist. Impacts to these sites would be considered a significant indirect impact.	#8 The study of the sites within the Area of Potential Effect (APE) had concluded that no significant elements of any of the archaeological sites are present within the APE. Therefore, direct impacts to the sites will not be significant. Given that the project will not represent a source of significant direct impacts, mitigation measures will not be required. In order to address indirect impacts, measures to mitigate such impacts shall include: <ul style="list-style-type: none"> Monitoring of all trenching and clearing activities during the pipeline construction by a certified Archeologist; In the event that any undetected elements of the sites are encountered, construction shall be halted at that location until the discovery can be evaluated and mitigation measures implemented to reduce the significance of impacts to a less than significant level; Any activities related to the proposed project within the location of SDI-12,809 will require boundary markers restricting access to a significant archeological site located to the immediate north of the APE in this area. 					City of Chula Vista and project archaeologist City of Chula Vista and project archaeologist				

SALT CREEK INTERCEPTOR SEWER MITIGATION MONITORING REPORTING PROGRAM (cont.)

Potential Significant Impact	Mitigation Measure	Time Frame of Mitigation				Monitoring Reporting Agency	Time Frame for Verification Frequency to		Date of Completion	Date of Verification on
		TM	Pre Const	Durin g Const	Post Const		Monitor	Report		
PALEONTOLOGICAL RESOURCES										
REACHES 3 - 8A/B POLICY OPTIONS 1 AND 2 Impacts to paleontological resources would occur during excavation and trenching for the proposed pipeline, when the geologic formations that have resource bearing potential are disturbed. Impacts would occur when fossils are physically destroyed by such activities. Long-term operation and maintenance of the proposed facilities would not have the potential to result in any significant impacts to paleontological resources.	#9 The following mitigation measures summarized from the Final Findings of Fact for the Otay Ranch EIR are incorporated as required mitigation for the proposed project: [a] Prior to beginning any excavation work, the City or its contractor shall demonstrate that a qualified paleontologist has been retained to carry out a paleontological resources mitigation program. [b] A paleontological monitor shall be onsite at all times during the original cutting/trenching of previously undisturbed geologic formations to inspect cuts for fossils. [c] If fossils are discovered, the paleontologist or paleontological monitor shall recover them. The paleontological monitor shall have the authority to stop work or divert work until fossils can be recovered. [d] Prepared fossils, along with copies of all pertinent field notes, photos and maps shall be deposited in a scientific institution with paleontological collections, such as the San Diego Natural History Museum			X		City of Chula Vista and project paleontologist				

